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Soviet Economic Statistics

Vladimir G. Treml and John P. Hardt, editors

Soviet Economic Statistics

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Preface

The validity and reliability of Soviet economic statistics emerged in the late forties as an important issue for Western scholarship, prodded by seminal questions raised by Abram Bergson, Alexander Gerschenkron, Seymour Harris, Harry Schwartz, and others. The probing and assessment continued for several years and resulted in a series of excellent papers which provided guidance for a generation of students of Soviet economics. Despite a significant increase in the volume of published Soviet data no similar general evaluation centering on statistics has been undertaken in recent years.

It is in the spirit of these earlier inquiries and exchanges of ideas that a conference was convened at Duke University in November 1969 to assess Soviet statistical practices and to provide the profession with guidance on better use of available data.

The assessment of availability, reliability, and credibility of Soviet economic statistics offered in this volume should be useful to specialists in the Soviet area as well as to those using Soviet statistics without specialized training who are in government, nonprofit organizations, business, and the communications media.

The papers presented and discussed at the Duke Conference provided the core of what eventually resulted in this volume. However, the volume cannot be considered proceedings of the conference, as all authors have substantially revised their original contributions to reflect comments and criticism made. Moreover, papers by Michael C. Kaser, Eberhard Schinke, Philip Raup, and Karl-Eugen Wädekin were not presented at the conference but added later to round out the publication and to insure, to the extent possible, a comprehensive survey of Soviet economic statistics.

Copies of the complete manuscript were mailed to several prominent Soviet statisticians who were invited to contribute to the volume either a separate chapter or critical notes and comments related to specific topics. However, no responses had been received by the time the volume went to press.

Contributors to the conference, but not directly to the volume, were

G. Warren Nutter, Assistant Secretary of Defense for International Security Affairs, on leave from the University of Virginia, and Arcadius Kahan of the University of Chicago, each chairing a conference session. John W. Kendrick of George Washington University presented the dinner address, "Socioeconomic Accounts as an Organizing Principle for Statistics."[1] Professor Kendrick also brought his considerable knowledge of Western statistics to bear during the conference, with numerous penetrating insights on Soviet practices. Likewise, David W. Bronson and James Noren of the Central Intelligence Agency, Norton T. Dodge of the University of Maryland, Daniel Gallik of the Arms Control and Disarmament Agency, D. Gale Johnson of the University of Chicago, and Dimitri M. Gallik of Research Analysis Corporation all added to the quality of the proceedings by their active participation. Professors Gregory Grossman and Herbert S. Levine contributed greatly in the preparation of the program. The organizers of the conference were James H. Blackman, Robert W. Campbell, John P. Hardt, John H. Moore, and Vladimir G. Treml.

With deep regret we note the untimely deaths of three of our colleagues involved at different stages with the conference: Leon Herman of the Library of Congress, Professor Jerzy Karcz of the University of California, and Paul Gekker of the Federal Reserve System. Both Leon Herman and Jerzy Karcz contributed to the organization of the conference, but did not attend. Paul Gekker chaired a session at the conference and completed his chapter (Chapter 18), as the reader may appreciate, but died before the book went to press. Each of these three men played an important role in enhancing our understanding of the Soviet economy and contributed immeasurably to the insights provided in this publication. We trust that the volume measures up to the standard of being a partial memorial to their efforts.

Scholarship transcends international boundaries and it would be appropriate to note with regrets the passing of a prominent senior Soviet economist and statistician, Albert L. Vainshtein, who also died between the time of the conference and the publication of the book. The reader will find references to Vainshtein's work in several places in our volume.

Funds, both for the conference and the publication, were generously provided by the Committee on International Studies, Duke University, Thomas Jefferson Center for Political Economy at the University of Virginia, and through a grant for Russian Studies to Duke University from the Doris Duke Foundation.

Special thanks for assistance and encouragement in organizing of the

1. Published as "The Historical Developments of National-Income Planning," *History of Political Economy* 2, no. 2 (Fall 1970): 306–15.

conference are due to Dr. John O. Blackburn, now Chancellor of Duke University, and Dr. Craufurd D. Goodwin, Vice Provost and Director of International Programs at Duke.

We also wish to acknowledge help and assistance provided in editing, typing, bibliographical work, proofreading and sundry organizational matters by John W. Dowling, Barbara G. Hart, Marion C. Salinger, Andrew Sheren, Jerome S. Rothenberg, and Barbara S. Thompson of Duke University, Keith Bush of Radio Liberty, and Dimitri M. Gallik of Research Analysis Corporation.

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I

Statistics in the Soviet Union

1

Holland Hunter

Soviet Economic Statistics: An Introduction

The USSR is a great laboratory of operating experience. It has undergone rapid growth, and there have been very deep social changes over the last half-century. The role of statistics is to measure them. Statisticians have the important responsibility of providing perspective for generalization and evaluation. This is especially important for the Soviet economic record, since there are important lessons in Soviet experience for other countries, both lessons about what has worked and lessons about what has not worked.

It is important to identify the basis on which Western economists and statisticians can legitimately evaluate the Soviet statistical system. To the extent that the USSR and the United States are dealing with similar economic problems, the kinds of statistics that will be useful are likely to be similar, even though many important differences remain. There are obvious and fundamental differences in the resource backgrounds of the two countries, in the structure of their purposes, and in their current answers to economic problems. Nevertheless, the analytic structure of their statistical theory and the practical contents of their statistical procedures need not differ.

This musical composition has five short movements. The first, as a kind of prelude, compares Soviet statistics currently available with the situation that prevailed in 1947. The second enunciates some new themes, noting three areas that now require more statistical attention than they received in the past. The third movement attempts complex development of these themes with attention to their inherent atonalities, and the fourth movement elaborates a related theme concerning the optimum quantity of statistics. A grand finale then goes beyond these current matters to sound a few still newer themes, sketching some future statistical airs that are just becoming audible, but may swell into harmonious strains in the future.

Soviet Statistics in 1947 and 1969: A Comparison

When postwar attention to Soviet statistics began, around 1947, very little was known in the West. To what extent have matters improved over

the last twenty years? The great difficulty here is in specifying some standard of adequacy, some benchmark for satisfaction. The old Churchillian notion of mystery wrapped in enigma is no longer accurate. The West has learned a great deal about the Soviet economy. On the other hand, it has been said that "we now know too much to know anything." Some of our increased understanding makes us more cautious and even more puzzled than we used to be. But within the extremes of knowing a great deal and not knowing anything, we should recognize a variety of specific situations.

Several important aspects of the economy and society now seem to be quite well understood, statistically speaking. Publication of the 1959 census, for example, together with subsequent demographic research, has provided well-rounded understanding of the demographic situation. In the late 1940's, after the tragic upheavals of wartime losses and migrations, this basic knowledge was lacking, even internally. Clearly the progress here has been great. Statistics on the labor force, long available only in the crudest aggregate form, have recently come to be available in far more intricate detail, and this area too now appears greatly improved.

Production data concerning several major relatively homogeneous commodities like electric power, basic fuels, certain ores, and basic steel products, have come to be available in considerable detail. Here the doubt and skepticism that prevailed in 1947 has, I think, given way to a reasonable degree of understanding and satisfaction with the published data. The same is true for freight traffic.

But in each case there are fringe problems, and some of the discussion in the chapters that follow is concerned with relatively minor issues of definition and coverage. They remind me of an interview I had in 1959 with a great railroad statistician, Ivan Vasilievich Kochetov, a genial gentleman. We were discussing fine points concerning Soviet and American railroad data, and he was asking about Interstate Commerce Commission and Association of American Railroads statistics devoted to Class 1 railroads. He wanted to know what difference would be made if Class 2 and Class 3 railroads were included, and he said, "Our leaders may not be able to solve all the great problems of world peace, but at least we can try to settle these little details!"

In addition to these statistically well-established areas of the economy, major clarification of its overall structure has been provided through the statistical work on input-output tables which has now made the USSR one of the leaders in the field. A whole new form of music, stimulated by that great composer, Wassily Leontief, has developed out of the promising work of Gosplan in the 1920's that was suppressed for thirty years. In both quantity and quality, Soviet interindustry analysis has now reached very impressive levels. It seems likely to provide a strong base for future statistical progress, as will be noted subsequently.

While much is heard from these corners of the Soviet amphitheater, vast areas of relative silence remain. Defense-related producing sectors are conspicuous in this regard, following longstanding Russian tradition. Military secrecy is understandable, given Soviet experience, but it imposes growing costs on the quality of Soviet economic performance because it impairs the analysis of policy trade-offs. The broad issue is discussed more fully below. By comparison with the situation twenty years ago, when disclosure would have revealed relative military weakness, release of defense-related economic statistics today would (at least this is my impression) demonstrate great strength. Disclosure of this strength might itself enhance Soviet national defense.

Another area of silence covers money and banking data. Lack of attention to this area was perhaps consistent with the elementary command approach that prevailed a quarter of a century ago, but both theory and experience suggest that continued neglect of this area will seriously hamper the efforts now being made to bring the Soviet economy to a higher level of effectiveness.

A third bothersome area of silence concerns the Soviet balance of international payments. Ample data on commodity trade have come available in the last decade, but Soviet international financial relations are still unreported. Again, this kind of secretiveness probably did little damage to the Soviet economy when its foreign trade was very small, but the currently large and growing volume of transactions between the USSR and Eastern Europe, to say nothing of Soviet trade with the West, Japan, and less-developed countries, clearly requires fuller disclosure in the interests of international confidence and responsibility.

Apart from differences in the richness of sound emanating from the various sectors of the Soviet economy, there are a number of general defects to which attention must be drawn. One must note, regretfully, that in many fields the flow of statistical information has not improved since the early 1960's, perhaps reflecting the change in TsSU's terms of reference noted by Murray Feshbach in Chapter 8. In the transport field, for example, books and journals are now almost as statistically arid as they were fifteen years ago. Recently there has been retrogression, not progress, in the substance of published economic statistics.

Qualitatively too, Soviet statistics leave much to be desired. As Morris Bornstein notes in Chapter 16, "Corrections, sometimes large, have been made from time to time in various series [of price statistics] but these changes have been neither acknowledged nor explained." Raymond Powell in Chapter 17 notes, as another example, that "experience raises a large question . . . of the meaning . . . of the Soviet budgetary surplus," though a clear explanation of so fundamental a matter has major importance for sound economic management.

Increased data availability has enabled Western economists to assemble production and value statistics in order to compute output indexes along scientific and ideologically neutral lines. But efforts to replicate official Soviet indexes have not yet succeeded, as the chapters by Rush Greenslade and Stanley Cohn show, though the gap has narrowed compared to that of the prewar period. The discrepancy leads to unnecessary skepticism and a "credibility gap" that spreads doubt to other Soviet information the way an out-of-tune instrument harms an orchestra.

The chapters of this book and the discussion that lies behind them yield a comprehensive judgment that these deficiencies in Soviet statistics reduce the effectiveness of economic planning in the USSR and impair the performance of the Soviet economy. As Marshall Goldman points out (Chapter 14) Soviet economists "are not allowed to utilize or even see much of the basic information that is necessary for effective planning," and yet, as he has added in discussion, "without adequate data, planners are blind."

New Conditions and New Tasks for Soviet Statistics

Three sectors of the economy now require much more statistical attention than has been accorded them in the past. The first is agriculture. Over the last twenty years, numerous campaigns have sought to improve the agricultural sector, but only recently has the need for an adequate data base begun to receive sustained attention. There is need for data on the land base, covering not only soil fertility, but also differential land values reflecting transport costs for getting produce to market and the pressure of competing land uses, for example, for airports. Kantorovich and other Soviet scientists have securely established the relation between land productivity in alternative uses and the appearance of differential rent. As yet, however, empirical data from the field do not match accepted theory.

Large-scale efforts are now being made by Soviet statisticians to obtain accurate data on production costs in the field-crop and livestock operations of collective and state farms. The conviction that least-cost-input combinations could be determined, and sound choices among alternative outputs could be settled, without regard for production costs, has fortunately been abandoned. If Soviet statisticians can provide agricultural decision makers with accurate cost data, the effect can only be to promote agricultural efficiency.

There is also need for collection and publication of statistics relating to the incomes of collective-farm members. Available information needs to be made more accurate, and previously uncollected information needs to be supplied. Morris Bornstein points out, for example, (Chapter 16),

that the Soviet index of agricultural procurement prices paid for farm products does not depict the actual movement of average prices. Gertrude Schroeder (Chapter 13) discusses a number of gaps in the income data that have been collected for the agricultural sector, especially those relating to earnings on private plots. Official disapproval does not justify statistical ignorance.

Another area that now enjoys high priority in the eyes of the regime is the consumer sector. Here the contributors to this volume have produced a number of valuable observations. Perhaps the most intriguing revolved around the observation that a higher level of living is likely to increase planners' uncertainty, for several reasons. When consumers hold adequate stocks of consumer goods, they are able to exercise more selectivity than when each holds a bare minimum. Similarly, discretionary income permits greater consumer initiative. At the same time, continued excess purchasing power blunts the pressure for improvement in the quality and assortment of consumer goods and muffles the signals that consumers convey.

Now that Soviet statisticians are wrestling with these problems, it is clear that those who plan the production and distribution of consumer goods need access to detailed statistics they have not previously used. In addition to overall estimates of prospective earned incomes, detailed data on consumer cash holdings, and on transfer payments to relatives in other oblasts are needed by planners in each region. This kind of information is clearly essential if consumer demand is to be accurately anticipated.

To what degree is the Soviet leadership genuinely concerned about meeting consumer needs? It could be argued, for example, that the system's directors still attach primary importance to maximum growth of output, and do not care much about whether consumer goods are efficiently enjoyed. Consumer goods are a leakage, producing only utility rather than capital. Until recently, repressed inflation kept the shelves bare. Would better inventory control be worth the added cost of a data system sensitive to consumer demand? Unsold stocks get worked off. Perhaps the lack of demand reflects an understandable evaluation of relative payoffs.

Others have argued, however, that increments of output could no longer easily be obtained from additions to the labor force, so that labor productivity gains are now more crucial than ever before. Interregional mobility, and gains in agricultural productivity, also require attention to income differentials and genuine progress in real incomes. It has been suggested that the declining birthrate might stimulate efforts to raise living standards, especially in housing, though long-run perspective suggests that, in

Western experience, parents have seen outlays on consumer goods as an alternative to large families.

It is perhaps a plausible guess that even if the system's directors were to focus on output growth, they would view the consumer sector as providing an intermediate form of output that is increasingly important in order to make Soviet consumers more productive. Research on the elasticity of effort with respect to income, and with respect to specific forms of real income (improved housing, better services, higher-quality goods, etc.) would enable Soviet statisticians to meet the leadership's demands in these terms.

Still another related area of growing importance is the services sector. It is a well-established characteristic of modernized economies that their services sector steadily grows in relative importance. Food, clothing, and shelter are augmented by education, medical care, recreation, and cultural expenditures. Many service activities move out of the household into commercial establishments. As the stock of consumer durables grows, service and repair functions gain increasing importance. Finally, as a dubious product of "modernization," national defense outlays seem to become important. Soviet statistics on education and medical care have long been ample, together with certain aspects of cultural and recreational outlays; but other service activities have been woefully underreported. Now that the activities themselves are increasing in volume, there comes into view a clear need for greater statistical attention to them.

Service activities are usually more effectively performed by small firms than by giant enterprises; often single individuals can be efficient. When Soviet efforts were concentrated on building heavy industry, service activities were ignored and sometimes suppressed; but now that a well-rounded and fully developed society is the objective, they obviously deserve thoughtful attention. Comprehensive information on the actual present situation would facilitate steps to enlarge and improve the flow of services from small-scale suppliers.

Soviet statisticians have debated the question of whether services output should be included in the national income, and contributors to this volume have noted the issue. Perhaps the most important point, for Soviet purposes, was Stanley Cohn's finding (Chapter 5) that inclusion of services output in national income would not alter past Soviet growth rates very much. Over the postwar period, services output has grown about as rapidly as material product. Since modernization will require the output of the services sector to grow more rapidly than material output in the future, a Soviet publicist could logically acquiesce now in its inclusion in official measures of total output.

The inclusion of services output would improve the accuracy with

which major policy trade-offs are perceived by Soviet decision makers. Thus, from the standpoint of the system's directors, a little "creative Marxism" would be distinctly helpful in this respect. Since added resources devoted to the services sector might have a substantial positive impact on labor productivity, this claim deserves explicit recognition. By the same token, resources devoted to the output of the national defense sector also deserve to be explicitly estimated and placed in quantitative contention against alternative claims on the country's productive resources.

Soviet Problems of Measuring and Managing Economic Growth

The analysis of Soviet experience has contributed to economic science through sharpening our understanding of important economic processes. Changes that have evolved slowly and without much control in other countries have occurred rapidly in the USSR, under strong central management. In analyzing them, many thoughtful economists have made contributions. Economic theory and practice have been enriched by their insights.

For example, concern with statistics for Soviet economic planning enforces deep appreciation of the fact that almost everything being measured is a heterogeneous composite. Even individual commodities are typically heterogeneous collections within an apparently uniform category. Few outputs are like electric power. Even commodities like food grains and timber are physically diverse. Important output flows like freight traffic are enormously diverse, though measured in disarmingly simple ton-kilometer units. Buildings and other capital structures are endlessly varied. Our old friend MBMW, (machine-building and metal working), which has figured so centrally in Soviet development, is the very essence of heterogeneity.

Two statistical problems result. First of all, we note that definitions, classifications, and boundary decisions would be inescapable difficulties in assembling and reporting data, even if the economy were completely static. Secondly, weights would be required to combine unlike elements in a composite, even if the economy made no use whatsoever of money. Dynamic growth processes only add to the inherent complexity.

Quite apart, then, from details of ownership and payment, prices enter the picture as weights on the "real" elements making up composites, especially at the national level. Much of the discussion in the chapters of this volume concerns the two functions that Soviet prices have had to perform in this framework. First, they have furnished fixed weights so that the performance of enterprises and other organizations could be compared with their plan assignments. This control function is best

served by unchanging prices and, as Morris Bornstein makes clear in Chapter 16, the prices set somewhat arbitrarily by government agencies have been changed only infrequently.

Deliberately induced economic change has, however, been central to Soviet economic planning. The human and material resource base has been enlarged and strengthened. A wide range of new technology has been introduced. The structure of state and household demands has been substantially altered. As a result, life itself has demanded, to use the Soviet phrase, that the weights assigned to the elements of innumerable composites, and aggregations of composites, be altered.

Changes in resources, technology, and demand alter the structure of opportunity costs and relative prices. These changes, in turn, must be properly incorporated in indexes that can be applied to aggregate value statistics in order to yield measures of the "real" change that has occurred. These familiar statistical dilemmas have been confronted in extreme form by Soviet and Western economists seeking to interpret the Soviet record.

One of the many difficult statistical problems that result is the universal problem of reclassification, "the permanent bane of attempts to construct consistent historical series" (Feshbach). It was argued that state ownership and control gives the USSR an advantage in formulating and imposing uniform, consistent statistical definitions, but that in practice the need for responding to change has largely dissipated this advantage. Others noted that Soviet statistical practice is woefully deficient in appending explanations of its classification procedures when statistics are published. It was suggested, partly in jest, that perhaps a statistical handbook should, instead of having no footnotes like the latest *Narkhoz*, consist solely of footnotes. The International Labour Organization has on occasion issued such explanatory volumes. This is a very serious suggestion—not principally for Western benefit, but for the domestic understanding of all those in the USSR who use aggregate information.

An interpretive problem that arises from recording rapid structural change is that truths concerning rates of growth and relative dimensions cannot be single-valued. This is what Alexander Gerschenkron long ago called "that great calamity of quantitative economic research that usually goes under the name of 'index number problem.'"[1] Neither Washington nor Moscow has accepted the consequent need to live with alternative

1. See his *A Dollar Index of Soviet Machinery Output* (1951), pp. 50–51. In a recent letter, Professor Gerschenkron comments: "I have come to think that the discrepancies resulting from different indices are in themselves an integral part of economic history and an interesting measure of the structural changes that have been taking place. In this sense, what is a calamity to the statistician is a source of enlightenment for the economic historian."

findings, though Abraham Becker continues to urge scientific accuracy.[2]

Perhaps the greatest polyphony in this volume, verging on cacophony, arises around the issue of whether accurate value data, generated through applying proper price weights to physical outputs in composing a hierarchy of economic aggregates, could be obtained and used to plan Soviet economic activity. Opinions range from the view that, since P and Q are hopelessly interrelated and price has to reflect users' valuations, the problem of pricing in a planned society is insoluble, to the view that loose, macroeconomic control from the center could be combined with decentralized responses to flexible prices by enterprises and households in a feasible planning system.

Amid these clashing themes there appears to be agreement that economy-wide command planning with physical units is not feasible, even if electronic data processing is employed. As Rush Greenslade puts it, "economizing requires value data." The note struck in the closing section of Stanley Cohn's Chapter 5 has commanded general agreement. Since optimizing requires accurate value data, there has been discussion of the benefits that would follow from abandoning gross value of output as a performance measure, replacing it with value-added. We are reminded that enterprise managers and central authorities confront a delicate strategic issue here: Should value-added be maximized or minimized? The issue is discussed further below.

The Optimum Amount of Statistics

One group of weighty considerations suggests that the volume of statistical reporting should be held down, while another set of factors suggests that the flow of statistical information should be far larger. Strict economy in the collection, processing, and publication of statistical data is desirable for at least four reasons. First, it saves scarce, valuable resources of skilled manpower and material inputs if data are not overabundantly collected. Secondly, economy in data gathering, processing, and reporting is a way of minimizing the noise that might otherwise bury needed messages. It has been evident in Soviet planning experience that on occasion so many numbers have been floating around that the really important ones were literally buried, so that their messages went unheard.

2. See Abraham Becker, "Comparisons of United States and USSR National Output: Some Rules of the Game," *World Politics*, October 1960, pp. 99–111, and his statement in U.S., Congress, Joint Economic Committee, *Hearings on the Military Budget and National Economic Priorities*, pt. 3 (Washington, 1969), pp. 986–92.

A third and related point in the temporal dimension is that restricting the volume of data being processed is a way of minimizing the delays that may prevent timely decisions. It has long been a notable characteristic of the Soviet statistical system that needed data have not been available to users on time. It was this chronic difficulty that once led Arthur Smithies to reply, when asked in Moscow if his study tour had enabled him to understand how the Soviet economy worked, "Yes, I now understand how the planned economy works, but I still don't understand *why*!"

A fourth reason for economy in data collection, as Joseph Berliner has observed, is behavioral. During campaigns, performance is distorted by behavior designed to simulate success. Recently, for example, the drive for technological progress has induced artificial "improvement" in many products. When N. S. Khrushchev called for sharp increases in meat, milk, and butter production a decade ago, the level of reported output promptly rose by some 15 percent as coverage and definitions were adjusted upward. Hence it would be desirable if the statistical system collected data unobtrusively, so as not to distort behavior.

The question of an optimum amount of statistics is closely related to the question of who should collect them. The theme is sounded in Robert Campbell's Chapter 2. TsSU has sought to monopolize data collection and hold down ministerial efforts, partly in order to protect enterprises from excessive reporting demands arising in the ministries. This is a familiar note to those who remember Washington during World War II. On the other hand, the need for new kinds of information suggests a different answer. Just as generals have a tendency to prepare to fight past wars, the leaders of TsSU can be seen as steadily improving their ability to deal with past problems. TsSU's director, V. N. Starovskii, regularly discusses new statistical needs, but contributors are impressed by the slowness with which TsSU has changed in practice. Thus pressure for new collection channels, to supply new kinds of data, is evidently quite strong.

Strong cautions are voiced against a tendency, not only to hold down the volume of data collected, but to restrict its circulation. The 1960 TsSU regulation cited by Murray Feshbach instructs TsSU to supply other agencies with the statistics "necessary for them," but this traditional approach is increasingly disadvantageous for a modern economy. Sensible choices of an optimizing kind require the knowledge of alternatives, and mystery impedes sensible choice. Providing perspective is a way of improving decisions. "Departmentalism" which narrows the flow of economic information can clearly impair economic performance.

Robert Campbell in Chapter 2 suggests that secrecy might be a weapon that large "associations" would employ against the center if they become

important. Interagency struggle over authority and responsibility has been a Soviet problem for forty years and there seems no reason to think it can ever be permanently settled.

But in an advanced society, perhaps the clearest principle to observe is that ample information promotes effective economic management. It is thus probably best to err on the side of ample information. Statistics are needed both for control and for decision making; clearly it will be advantageous to do the checking up, the controlling, after proper data have been made available for wise decisions. If it is permissible to offer unrequested advice to the USSR, my suggestion would be that responsible participants in operating the Soviet economy, especially in the new framework of reform, should be supplied with ample information so that the quality of their judgments can improve.

A theme with intriguing variations develops around the relative merits of enumerative as opposed to sampling statistics. It has been pointed out by Philip Raup that "only the poor countries can afford enumerative statistics; developed countries are abandoning them." Good statisticians know that well-designed samples can provide more accurate estimates of aggregate economic phenomena than attempted complete enumerations. When data-collection costs are considered, the advantages of sampling are decisive. There is a very strong Soviet tradition in mathematical statistics, and one can perhaps expect that it will increasingly be brought to bear on management of the economy. At the April 1968 All-Union Conference of Statisticians, V. N. Starovskii called among other things for "the replacement of complete enumeration by wider use of sampling . . . as a means of making reporting both more compact and more precise."[3]

There may be a sense in which complete enumeration fitted the style of Stalin's prewar command economy, when the number of enterprises and products given high-priority attention was limited. Now, however, sampling may be both more efficient and more necessary in seeking to keep track of a far more complex economy.

Sampling has long been employed for household-budget studies, but for many years no use was made of the results. Marshall Goldman in Chapter 14 points out their greatly increased importance, now that estimates of consumer demand are more necessary. Soviet writers have suggested that the representativeness of the household panels being sampled needs improvement, and the suggestion has arisen that greater recognition of territorial and branch diversity would make large household-budget samples more informative.

3. *Vsesoiuznoe Soveshchanie Statistikov, 22–26 Aprelia 1968 g.* (Moscow, 1969), p. 15.

In another area, samples of commodity prices at both the wholesale and retail levels, long collected by TsSU, have been critically reviewed. The subject has had low priority, and Soviet work on price indexes has been both limited and very poorly explained. With new products entering the assortment, and with attention focused now on sales rather than production, this meager treatment seems extremely shortsighted. Even the handbooks of prices that used to circulate freely now appear to have been withdrawn from general use. The effect can only be to damage the performance of the economy.

Numerous remarks by contributors are directed toward issues of quality rather than quantity in Soviet statistics. Obviously the concept of an optimum extends to qualitative features of the data generated by the statistical system. A limited flow of the right kind of data is clearly preferable to a large flow of inaccurate or inappropriate statistical information. Soviet statistical handbooks typically provide page after page of minor detail—for example, concerning sown areas— and of meaningless numbers—for example, indices based on 1913. As Lenin once said, "Better less, but better."

The ideal score for a statistical symphony would present value data that embodied truth, in the sense that aggregates accurately reflected relative valuations. As L. V. Kantorovich has shown, the dual to a macroeconomic linear-programing solution would contain "objectively founded indicators" having this property.[4] Theoretical market-clearing prices of this sort compel admiration also because they are economical as well as accurate. They embody a great deal of information about opportunity costs on both the supply side and the demand side. In the absence of compact messages reflecting economic interdependencies, vast flows of administrative information must be compiled and scrutinized.

In an economy that is progressing, accuracy in value data requires that the underlying valuations change frequently. Technological progress is earnestly sought in the USSR, yet technological progress changes underlying relationships in a way that requires corresponding change in relative prices. Added capacity alters the structure of the capital stock, while discovery and depletion alter the resource base. These changes, together with changes in the structure of demand, should be promptly reflected in relative prices and the aggregate value data that embody them. In these respects the inherited Soviet statistical system leaves much to be desired. A rigid statistical system cannot meet the needs of a flexible economy, bent on incorporating the latest methods and using its resources with maximum efficiency.

4. See his *Ekonomicheskii raschet nailuchshego ispol'zovaniia resursov* (Moscow, 1959), pp. 142–70.

Though accurate, well-constructed value aggregates could go far toward meeting essential needs, Robert Campbell points out in Chapter 2 that the statistical system should supply schedule data as well. A search system, scanning alternatives and estimating elasticities, would facilitate iterative adjustments toward optimality. An ideal system, finally, would have room for "unexpected facts."

Future Statistical Concepts and Extensions

While the major themes of this volume concern current problems and opportunities of the Soviet statistical system, some future-oriented notes are sounded as well. Perhaps the best statement of these is offered in a soon-to-be-published paper by John Kendrick. He suggests some new approaches which, barely audible now, may gather strength in coming years. (See his recent article published in *History of Political Economy,* vol. 2, no. 2.)

The range and power of the Soviet statistical system could be improved, for example, through the elaboration and presentation of a flexible set of interrelated national accounts. A manual for an integrated, comprehensive system of economic accounts, issued in revised form by the United Nations in 1968,[5] suggests the possibilities. The USSR could build on the pioneering efforts that began with the 1923–24 national balances; Soviet work along these lines is already under way. Flexibility might be served by the preparation of multiple accounts designed to meet multiple purposes in eclectic fashion. The Soviet tradition of seeking a single, all-purpose, once-for-all design has been criticized as unlikely to meet separate needs effectively.

One part of a system of national accounts in the USSR will surely involve interindustry tables, and here I note two possibilities. I wonder if transactions information from enterprises could not be put on a current reporting basis, with data being collected from the user, not the producer. If a detailed classification number were assigned to each product and to its producer, and an invoice, containing these numbers and the original transfer price, followed the product through supply agencies to the using enterprise, the result would be to make available data that could be quickly and accurately assigned to the proper cell in an interindustry flow table. Expensive field research, seeking to reconstruct what happened *ex post* would no longer be necessary. The data could be collected on a sample basis, much as the Interstate Commerce Commission in the United States collects a 1 percent sample of railroad freight waybills

5. United Nations, Department of Economic and Social Affairs, Statistical Office, *A System of National Accounts* (ST/STAT/Ser. f/2/Rev. 3), 1968.

to keep track of freight traffic. National tables could be prepared more cheaply and more quickly, greatly enhancing their usefulness.

One can also visualize disaggregating certain rows and columns of a national interindustry flow table in order to get a clearer understanding of processes in certain sectors. In order to maintain manageability, other rows and columns could be aggregated together. In effect, one would be moving a magnifying glass from one part of the table to another, opening up at one point and closing down elsewhere. Thus, detailed interindustry data could be rearranged to meet particular needs.

Economic analysis of statistical information has always, unfortunately, been restricted by the nature of the statistics available. I am reminded of the man who late at night was staggering around under a streetlamp, trying to find his lost ring. A kindly passerby stopped to help him find it; they looked unsuccessfully. The passerby asked the drunk, eventually, "Are you sure this is where you lost it?" The drunk said, cheerfully, "Oh no. Actually, I lost it up that alley over there. But it's too dark in there to look, so I'm looking out here." There is a sense in which economists have been measuring, out under the streetlight, the things which are easy to find. Unfortunately, some of the most important information required for improving the quality of our lives is "up that alley." Several suggestions made in this volume concern new statistical approaches that would in effect put some streetlights in the alley.

There is, for example, the problem of accounting for external diseconomies. Both Marshall Goldman and John Kendrick have suggested subtracting the costs of air and water pollution from the apparent value of GNP. This is reminiscent of an extreme view proposed by the British anthropologist S. Herbert Frankel, a former civil servant in Africa. He is the kind of anthropologist who warmheartedly feels that traditional society is beautiful, and he argues that if you count up all the costs laid on an individual as he enters a so-called modern highly civilized society, he may in fact make no net gain at all.[6] One need not go this far to recognize that the costs borne by a modern urban citizen, as he sits in congested traffic breathing polluted air, are non-negligible. As steps are taken to remedy these defects, conceptual issues will arise; should the income and product generated by the remedial steps be added to the income and product generated in the activities that gave rise to the external diseconomies in the first place?

Improved national accounts would also recognize the costs imposed on customers by certain sellers' practices. As Marshall Goldman points out in Chapter 14, Soviet retailers make consumers wait. Cost savings

6. See S. Herbert Frankel, *The Economic Impact on Under-Developed Societies* (Oxford: Blackwell, 1953).

for the retail trade outlet, however, are not true savings; the costs are simply transferred to the general public. In similar fashion, railroads have long shifted some costs from themselves to shippers and receivers through requiring extremely rapid loading and unloading of freight cars, and through requiring large consignments. Comprehensive national accounts in the future should be designed to evaluate such interactions from an inclusive point of view.

Another suggested improvement would shift the counting of consumer durables from under the streetlamp, when they are first purchased, to their location up the alley, and would seek to measure the flow of services from them over the period of their useful lives. In the USSR, such a change would obviously improve the ability to anticipate consumer demand and thus to reduce unsold inventories.

For national accounts, just as the production concept should be extended from material output alone to include services, so the capital concept should be extended to include intangible as well as tangible capital. John Kendrick suggests that outlays on research and development, education and training, and health and mobility raise productive capacity in much the same way that added capital per worker does. Intangible investment has been very important in Soviet experience. David Granick has shown that at times there has been disinvestment as well as investment in intangible capital.[7] Informed policy analysis can only benefit if trade-offs between tangible and intangible investments are explicitly considered.

The Soviet statistical system now faces difficult problems of devising statistical measures that will incorporate quality as well as quantity in their coverage. Numerous conceptual quandaries arise. A higher-quality product may have lower costs, as Alec Nove has pointed out in connection with fillings for teeth. The amalgam which takes the place of gold, or some other metal, is both cheaper and longer lasting. There is an apparent fall in output, though in truth welfare is improved. Perhaps a slowing down of measured Soviet output growth might be countered by measures that accurately reflected quality improvements as they are made.

A higher-quality product may have higher costs than the old item, yet the gains to consumers may be even larger. A recent Soviet decree calls for setting new product prices at some "fair" point lying between an upper bound, where the user just benefits from buying it, and a lower bound where the producer just covers cost. Joseph Berliner points out in Chapter 15 that when new-product prices in the past were set close to

7. See his *Soviet Metal-Fabricating and Economic Development* (Madison: Univ. of Wisconsin Press, 1967), chaps. 4 and 5.

producer costs, real quality gains may have been undercounted. Others pointed out that purported quality improvements have been used on occasion to excuse price increases that could not be effectively resisted by consumers in a sellers' market.

The current Soviet stress on improved quality, even if it carries a higher price, appears to have no place for lower quality items offered at a lower price. Perhaps this reflects a nineteenth-century tsarist tradition exemplified by the railroad built from St. Petersburg to Moscow. The tsar's advisers insisted on very high engineering standards for roadbed, bridges, rolling stock, etc., evidently spurning the economizing approach of a Western commercial mentality.[8]

Conclusions

This introduction can now be recapitulated as follows. It begins with a brief review of Soviet progress in statistics since 1949, noting marked gains in the availability of data for subjects like population and electric power, and continued silence on topics like the money supply and national defense. The next section discusses three sectors of the Soviet economy that raise current statistical problems: agriculture, the consumer sector, and the services sector. This is followed by a discussion of the role of value weights in a changing Soviet economy; debate centers on the likelihood and feasibility of various basic improvements in Soviet practice. The optimum amount of Soviet statistics is considered and arguments are offered for greater release of improved data. Finally, the review suggests attention to (a) an interrelated set of national accounts, (b) currently reported interindustry flow data, (c) estimates of external diseconomies, (d) data on intangible investment, and (e) measures of qualitative change, as statistical areas where pioneering would be productive.

A list of matters overlooked in the volume might note that it has failed to touch on important topics like Soviet demography, the capital stock (especially housing), social statistics, the transport sector, and interregional economic trends. In each case, however, the omission reflects the ready availability of a thorough study, e.g., Moorsteen and Powell's *The Soviet Capital Stock*, the unavailability of a knowledgeable commentator, or the paucity of published evidence. Readers will no doubt find that the chapters still reflect incomplete interaction among the several contributors and comments. Ideally there should be another volume of studies published a year or so after this volume, when there has been time

8. See J. N. Westwood, *A History of Russian Railways* (London: Allen and Unwin, 1964), pp. 31–34, and R. M. Harwood, *The Beginnings of Railway Development in Russia* (Durham: Duke Univ. Press, 1969), pp. 132, 157, 215, and 236.

for another meeting of specialists and for reflection upon all the work taken together. Such a meeting might well include Soviet participants.

The basic criticism of the Soviet statistical system that emerges from the views expressed by contributors centers on the restricted and rigid nature of Soviet statistical reporting. Most Soviet statistical publications are popular rather than scientific, in the precise sense that they lack adequate supporting explanations and detail. Moreover in conception and presentation most Soviet statistical series are rigid rather than flexible in the sense that their coverage is static and single-valued. Yet it is now obvious that economic efficiency requires analysis of a many-sided, complex reality by means of a flexible, thorough, open, well-understood set of current statistics. In addition, economic progress calls for a statistical system that adapts to underlying basic changes in both the form and content of economic activity.

It is not at present clear how the Soviet statistical system will change to meet these requirements. Some areas are more fluid than others. Divergent forces are at work, and several (though not a hundred) schools of thought are contending. Perhaps, however, the statistical reporting system that fits a modern economy has certain underlying properties that are invariant with respect to political institutions. If so, Soviet statistical theory and practice may evolve in ways that will not be wholly unfamiliar.

In both the USSR and the USA statisticians are challenged to broaden and refine measures of economic activity so as to reflect the quality of life in the two societies. It is the quality of life, not merely the quantity of output, that we seek to raise as rapidly as possible. An ideal statistical reporting system would focus on the ultimate humane objectives that are officially said to motivate each system.

The statistical system of each country should provide data for economic decision makers that will promote the optimum use of scarce resources. This objective is the same, even though institutions and the degree of centralization differ, and will continue to differ, between the two countries. It is clear, as Robert Campbell notes in Chapter 2, that statistical data need to fit an economy's control mechanism; but it could be argued that improved data can be used to improve the control mechanism, too.

These improvements do not, however, come easily. We should remind ourselves that scholars everywhere want more from their statistical agencies than can feasibly be supplied. The USSR TsSU already conducts a very large statistical program whose impressive quality becomes apparent in proportion to the extent of its publication. But TsSU cannot collect new kinds of data until concepts are reasonably well-defined, and

some of what is wanted is very hard to measure. Progress will require sympathetic interaction between theory builders (cyberneticists) and those who are immersed in complex reality.

Though the primary function of a national statistical reporting system is to meet domestic needs, it plays a role also in providing evidence that can be used for peaceful international competition. Similarly, international scholarly criticism is a healthy way of keeping everyone up to the mark. Let me share the note on which the volume concludes as it draws attention to the great progress that has been made in Soviet statistics over the last two decades and challenges Soviet statistics to overtake and surpass Western statistics in both quantity and quality during the next twenty years.

2

Robert W. Campbell

The Changing Role of Statistics in the Soviet Economic System

Most of the authors of chapters in this volume are examining Soviet statistics from the point of view of the outsider. They concentrate on the issue of the availability, reliability, and usability of Soviet statistics for the purposes of those who want to study the economic history, performance, or policy of the USSR. But one can also ask about availability, reliability, and usability from the point of view of the insider. How well do the statistical system and the statistics it produces serve the needs of the economic policymakers of the Soviet Union? The two points of view have something in common. The statistics the outsider uses are also used by the insider (though the latter has more comprehensive and more detailed information) and to some extent the questions asked by both are the same. Both are interested in how fast the economy is growing, what would be a rational pattern of fuel production and use, and how effectively science resources are being employed. But the outsiders have often thought in terms of criteria different from those accepted by Soviet decision makers and for their purposes may conceptualize any of the questions being asked quite differently. In the case of national-income statistics there may be a real divergence between what the two sides think the goal of growth is. To take industrial-output statistics as another example, both sides may at bottom be trying to get at the same thing, but theoretical clumsiness has hindered the Russians in conceptualizing a valid measure of growth. Hence the evaluations of Soviet statistics made by the observers might diverge appreciably.

The internal point of view involves questions valid in their own right, but it is also the proper point of view to take for getting some insight into the forces that influence the kind and volume of Soviet statistics that get produced. And if we do not limit our question just to the issue of how well Soviet statistics serve Soviet planners' needs as presently perceived and defined, but ask how those needs might change, the internal point of view offers a good way to think about how the operations and output of the statistical system will be affected by changes in the planning system.

Statistics in the USSR can be divided into two big classes—state

statistics and departmental statistics.[1] As outsiders, we are acquainted almost exclusively with state statistics; they are the basis for our kind of work. State statistics are also the more important of the two classes in meeting the general planning and control needs of the system. Departmental statistics, distinguished by the fact that they are not collected or processed by the Central Statistical Administration, TsSU, are vital for many echelons in the planning and control process. If one were to make an inventory of economic-policy questions and then ask how these could be analyzed and evaluated with the statistics that TsSU publishes, or more broadly, with those we know are gathered by TsSU, one would conclude that the planners did not have the information needed. To take an example with which I have been concerned—choosing the concept and design for a communications-satellite system—the system of state statistics produces quite inadequate information on some of the most important variables, i.e., the characteristics of existing traffic, and elasticity of demand. But the answer is often that many additional data on which decisions can be based are available, to be drawn on if necessary, in departmental statistics. This is often the case in Soviet discussions of research and development, where the analysts and decisionmakers make their own aggregations from reports of individual institutions.[2] There is, of course, the problem that departmental statistics may be kept private by the departments and hence unavailable for higher-level decision making. To be complete, a discussion of the Soviet statistical system ought to cover departmental as well as state statistics; but that is a very elusive subject to investigate, and this paper deals almost exclusively with state statistics.

The domain of state statistics is almost coterminous with the operations of TsSU. Hence another way to phrase my question would be, How well does TsSU do its job? That question might be judged to be either too simple-minded to be worth our consideration or too complex to be answerable. From one point of view TsSU does a rotten job. Soviet economic literature is full of stories of unused data, erroneous data, inconsistencies between planned and statistical data in coverage and definition, failure to pass data on to the right people, slowness in processing, and complete absence of certain kinds of data. The other chapters in this volume provide varied illustrations of such problems in particular

1. This chapter does not consider the question of statistics as a science, and deals almost exclusively with statistics in the sense of data collection and processing. The former interacts with statistics in the second sense and also has many applications to economic decisionmaking (as in quality control, reliability design, and the like) but is generally a separate issue.

2. See for example L. S. Bliakhman, ed., *Voprosy ekonomiki i planirovaniia nauchnykh issledovanii* (Leningrad, 1968).

kinds of statistics. On the other hand nothing in this world is perfect, and the system does function. I see no point in collecting bushelbaskets full of horrible examples, since I know no way to weigh them up to decide whether TsSU should be rated a failure or a success. Hence, I plan to take a rather gross view of TsSU's performance, and my question about how well it does its job focuses less on concrete details of job performance than on the issue of what that job is and what it might become. An appropriate frame of mind might be that of a management-consulting firm called in to advise the leaders of TsSU on a strategy for strengthening the security and influence of their organization. So my paper is as much a study in bureaucracy as of statistics per se.

The Changing Role and Position of TsSU

One of the best ways to orient oneself on TsSU's environment is to review some of its past problems and the adaptations it has made so far. This gives some idea of the pressures and constraints within which it operates and the opportunities that may exist for it to take advantage of. There is no need to summarize here the organization of TsSU in any detail (since it has been presented in other sources)[3] or to go back very far. During the first three decades of Soviet history, TsSU was a relatively weak and dependent organ. It started out with considerable independence, high aspirations, and some very great achievements, such as the first input-output table, but lost its independence, in both organizational and scientific aspects, in the era of Stalinism and command planning. After 1930 it was subordinated to or merged with Gosplan, and at times even its field-office structure was amalgamated with local planning units. During most of the period of its subordination to Gosplan the organization was called TsUNKhU (Tsentral'noe upravlenie narodnokhoziaistvennogo ucheta—Central Administration of National Economic Accounting) rather than the Central Statistical Administration, but that aberration in name was connected with ideological conceptions about the nature of statistics rather than with its status or operations. Then as now, its function was conceived as being the eyes and ears of the state, a source of information for the needs of party and government policy making, and providing the data required for control of plan fulfillment.

3. Good sources on the present status and organization of TsSU are A. I. Ezhov (or Yezhov), *Organizatsiia statistiki v SSSR* (Moscow, 1968) and an English translation published by Progress, Moscow, in 1967. The two books are not identical, and it is advisable to use them both. Gregory Grossman, *Soviet Statistics of Physical Output of Industrial Commodities,* (Princeton Univ. Press: Princeton, N.J., 1960) and Murray Feshbach, *The Soviet Statistical System: Labor Force Recordkeeping and Reporting,* U.S. Bureau of the Census ser. P-90, no. 12 (Washington, 1960) are pioneering studies of the influences that affect TsSU and of how it actually works to generate specific kinds of statistics.

But this role was actually defined in such a way as to be quite restricted, and I believe it was essentially the data-gathering arm of Gosplan. The rationale for subordination to Gosplan was to assure that TsUNKhU would be responsive to Gosplan's needs in providing the data necessary for plan construction and control of plan fulfillment. Such a structure was no doubt effective on that score, but it imposed a real cost. The independence of the organization and the reliability of its reports were compromised, and its intended function of producing data to be used as an input into decisionmaking at higher levels of government was undermined.

"Centralization" under the 1957 Reorganization.

In the general upheavals that altered the planning system in 1948, TsSU was removed from Gosplan and subordinated directly to the Council of Ministers. We still do not know what mixture of political struggle and real desire for organizational rationalization influenced the 1948 change, but from this point on, TsSU gained steadily in power and influence and exercised ever wider responsibilities. A particularly important landmark was the reorganization of industry and construction in 1957 from the branch principle to the territorial principle, which was the occasion for what is described as the "centralization of the system of state statistics." For two sectors of the economy—industry and construction—this radically altered the relative importance between the two upward flows of data in the system (via the ministries and via the TsSU apparatus) in favor of TsSU. TsSU had always had a territorially organized network of field offices to which enterprises submitted their reports, and TsSU received the data from which it prepared its reports both from these offices and in consolidated form from the ministries. It is far from clear how this dual channel of reporting worked before 1957, but I believe that for large regions of the statistical universe TsSU had received its information only from central branch organs of the administrative hierarchy and not through processing reports received from its own lower-level units. In his study of the labor-force-data recordkeeping and reporting system, Feshbach makes clear that for large parts of its labor data TsSU depended on branch summaries prepared by the ministries and delivered in Moscow.[4] And there are assertions by V. N. Starovskii, chief of the USSR TsSU, that TsSU depended on the ministries for information and could not really trust that information. There was no doubt great variation among sectors. Railroad statistics seem to have flowed to TsSU *only* through the central statistical offices of the ministry.[5] Several of the post-1956 statistical handbooks have

4. Feshbach, p. 18.
5. I. V. Kochetov, *Zheleznodorozhnaia statistika* (Moscow, 1953), p. 10.

been prepared and published not by TsSU, but by departmental statistical agencies—e.g., the first handbook of health statistics, all the handbooks of budget and foreign-trade statistics. We can tell from the TsSU plan of statistical work that even today in those areas it collects very little information on its own and depends almost exclusively on the departments. To some extent the two flows were supplementary rather than dual. For example, the lower-level agencies collected and passed up data for enterprises not under the jurisidiction of union and union-republican ministries. Nevertheless, to some degree there *was* a parallel flow. It has sometimes been assumed that these two flows were maintained so that the results could be checked against each other and departmental falsifications controlled. But the more I have read about it, the less it seems that this was really the case. In examining this issue for industry, Gregory Grossman found no evidence that data from the two flows were used to check each other.[6] He thinks that the departmental flow was sustained mainly by the ministries' insistence on having data sooner than they could expect it from TsSU.

One might wonder what the job of the local offices was before 1957 under these circumstances; but even with much of the most vital statistical information flowing into TsSU hands through the ministerial channel, there were still important functions for the lower-level organs. They exercised some control over the accuracy of statistics just by seeing that enterprise statistical reports were prepared in accordance with TsSU instructions and were accurate. And they had the job of compiling information in a territorial classification, which was a separate job in its own right. Unfortunately, much of the statistical material summarized in regional classifications was never used by anyone, and it is commonly asserted that regional officials and planners could not get from the local TsSU office the data for their territory.[7] One reason TsSU depended on ministerial reports was that it did not have the communications or processing capacity to compile data itself from enterprise reports received by the units of its regional substructure.

In any case the intent under the reform of 1957 was to block the flow in the departmental channel and to strengthen the TsSU channel. An important reason behind this decision was to make TsSU a pipeline into affairs at the lowest level, since the danger that the regional economic councils (the *sovnarkhozy*) would use their powers for localist purposes was well recognized.

There was a big struggle over this decision, clearly indicated in the statements at the 1957 conference of statisticians. Starovskii seems to

6. Grossman, p. 38.

7. TsSU, *Vsesoiuznoe soveshchanie statistikov, 4–8 iiunia 1957 g, doklady, vystupleniia i resheniia* (Moscow, 1958), p. 17.

have wanted exclusive rights in the statistical field, so that enterprises under *sovnarkhoz* jurisdiction would send their principal reporting forms *only* to the local TsSU offices, which would process the data and send statistical summaries on to the *sovnarkhoz*. These reports would constitute the data base for *operational* control by the *sovnarkhoz* of the enterprises under its jurisdiction. The conflict ended in a compromise, with the enterprise allowed to send a second copy to its immediate superior in the administrative hierarchy. But Starovskii claimed that this would be only temporary and that the practice would be reviewed when it was decided how much of the data in these reports was really needed for controlling the activity of the enterprise.[8] Whatever happened on this issue, TsSU did become the main channel for the statistical flow. Enterprises submitted their reports directly to oblast-level offices of the TsSU, which then processed the data and sent them upwards to the higher levels of TsSU and laterally to the chief administrations of the *sovnarkhoz*. The second copies which enterprises were allowed to send to their supervisory organs were for information purposes only; the *sovnarkhozy* were not expected to process these data on their own, but to depend on the summaries and reports prepared for them by TsSU.

A similar procedure had been instituted the year before for procurements, and in 1958 it was extended to agricultural statistics also. TsSU had proposed that this principle of "centralization" be extended to several additional sectors such as trade, education, and culture, but seems not to have won that point. In the sectors outside industry, construction, and agriculture, the departmental channel remained predominant; i.e., enterprises sent their statistical reports only to their superior organs, which processed them and passed the data on to TsSU only at the republican or central level (depending on what kind of ministry was involved).

The law on the 1957 reorganization made the chief of TsSU (for the first time since the twenties) a member of the Council of Ministers.[9] It also called for a new statute for TsSU to conform to the new status which it had been given by the reorganization, and a new statute *was* adopted in 1960.[10]

The Beginnings of Mechanization

The centralization resulted in a large increase in the volume of TsSU operations, which TsSU was able to handle only because it was authorized

8. Ibid., pp. 59, 64.

9. *Direktivy KPSS i sovetskogo pravitel'stva po khoziaistvennym voprosam* (Moscow, 1958), 4:738.

10. V. Starovskii, *Vestnik statistiki*, 1967, no. 10, p. 25.

for the first time in its history to begin seriously to mechanize its data-processing work. In 1957 the organization had a network of about 70 machine accounting stations (MSS) in operation, with a staff of about 2,000 workers and a stock of 3,900 machines. To a large extent this system did not serve TsSU's own processing needs, but worked on contract for enterprises, doing accounting work for the latter. As part of the centralization, TsSU was to create a network of 105 new oblast-level data-processing stations. The machine stock was doubled, and a big increase in the labor force was authorized. And for the first time the organization began to escape the limitations of its primitive communications system: teletype links were set up between the regional offices and the Moscow office. In the years since, this network has increased steadily, and there are now about a thousand machine accounting stations and data-processing centers of various sizes and degrees of complexity. The stock of machinery has grown accordingly, so that at the beginning of 1968 TsSU had in its system 26 computers (mostly Minsk-22, according to S. V. Sazonov, chief of the Chief Administration of Computing Work), 1,838 *komplekty* of punched-card equipment, and 35,000 keyboard machines.[11]

Expansion of Functions

All during this period TsSU kept acquiring new kinds of statistical work and expanding and revitalizing some of its older functions. Notable in this connection were the recovery of responsibility for harvest statistics (this job had for many years been carried out by a special inspectorate, but was returned to TsSU at the time of the return to barn yield),[12] conducting the All-Union Population Census of 1959, and the revaluation of fixed assets in 1960. There was also an expansion and improvement of the budget surveys, which by Starovskii's admission in earlier years produced information of "a more or less academic character."[13] The organization suffered some embarrassments, such as the disclosure of fraud in agricultural output statistics in 1961, but seems to have weathered these without being subjected to the drastic shakeups characteristic of its earlier history.

In 1960 TsSU acquired responsibility for compiling input-output tables. I have been able to find very little discussion that would clarify how the decision was made to assign that job to TsSU, but it seems clear that TsSU was not an innovator here or even a very responsive follower.

11. V. Pronin, *Vestnik statistiki,* 1968, no. 8, p. 45, and E. Semenov and E. Mashikhin, *Vestnik statistiki,* 1968, no. 10, p. 80.
12. V. Starovskii, *Vestnik statistiki,* 1967, no. 10, p. 24.
13. V. Starovskii, *Planovoe khoziaistvo,* 1967, no. 7, p. 22.

(It should be remembered, however, that it was TsSU that had constructed the original input-output prototype in the twenties.) The first experiments with input-output analysis were conducted in the NIEI of Gosplan in 1957–59.[14] According to Nemchinov, speaking at the 1957 conference on statistics, NIEI had approached TsSU with a proposal to do joint work on input-output tables, but TsSU declined.[15] It seems that TsSU did not initiate the project for the 1959 table either. L. Ia. Berri and A. N. Efimov say that compilation of the 1959 *balans* was organized "on the initiative of Gosplan."[16]

That area of its activity has expanded considerably since. In addition to the two main tables already completed, it is planned to produce a new study every three years, and TsSU's Scientific Research Institute is exploring the possibilities for adding to the present reporting a system of indicators that would make it possible to adjust these benchmark tables on an annual basis. At the present time TsSU seems to be thoroughly committed to this responsibility, but its claim may now be disputed by Gosplan. According to Ia. A. Oblomskii, head of a department in Gosplan responsible for introducing mathematical methods in planning, the slowness of TsSU in preparing tables makes it difficult to use them in planning and "the time has come to construct the interbranch balance directly in Gosplan."[17]

Effects of the Reorganization of 1965

The next crucial point in this history was the return to the branch principle of administration in industry and construction in 1965. This might have meant that TsSU would once again lose many of its functions to the ministries, but it was decided that the principle of centralization would be retained. Enterprises were to continue to submit their reports directly to the local statistical offices for processing, rather than via the newly restored ministerial hierarchies. The ministries were supposed to receive basic data on the performance of their lower-level organizations only from TsSU. In practice, the principle of centralization has been considerably eroded since the return to the branch principle. There did not seem to be a lot of controversy on the issue at the time. It may be that the decision was taken without much discussion. After all, the

14. A. G. Aganbegian et al., *Primenenie matematiki i elektronnoi tekhniki v planirovanii* (Moscow, 1961), p. 53.

15. V. S. Nemchinov, *Izbrannye proizvedeniia. Planirovanie i narodnokhoziaistvennye balansy*, (Moscow, 1968), 5:380.

16. V. S. Nemchinov, ed., *Primenenie matematicheskikh metodov v ekonomike i planirovanii*, vol. 3, *Mezhotraslevoi balans proizvodstva i raspredeleniia produktsii v narodnom khoziaistve* (Moscow, 1962), p. 38.

17. Ia. A. Oblomskii, *Planovoe khoziaistvo*, 1968, no. 7, pp. 62–63.

ministries did not yet exist to speak up in defense of their interests, and in any case TsSU has always had the inside track. Starovskii has boasted of the great support the statistical service has had from the Central Committee and from the government in all these battles.[18] But obviously there was great potential for friction in this decision, and TsSU has been retreating ever since. The ministries and planning organs object that they do not get the information they need for control and planning. For example, a spokesman for the aviation industry complains that TsSU ought to recognize the needs of the ministries for more detailed information to fulfill their responsibilities and ought to meet them halfway in allowing more branch statistics.[19] One republican Gosplan official says that the republican statistical administration provides fulfillment reports on only a very small fraction of the indicators that are planned for the republic, and that these are received very late. Although the local statisticians understand Gosplan's plight and are sympathetic, they are so loaded with the work of processing data to be sent on to TsSU SSSR that they cannot help.[20] All these clients want a great deal more information than they are getting. To the extent possible, TsSU officials fight back, relying heavily on the argument that much of what the ministries are asking for is information that they do not need and really ought not to have if they are to do their job in the spirit of the post-1965 reform. But it seems to be a losing battle. TsSU must either produce more information itself and/or let the ministries introduce some degree of departmental statistics, or see the principle of centralization completely swept away.

There seems to be a controversy within the organization on this point. Starovskii has said that there is no reason to reconsider the principle of centralization. Many people in the organization are quite willing, however, to turn many forms of statistics back to the ministries and departments. At the 1968 conference of statisticians, several heads of the Republican statistical bureaus made such suggestions.[21] This is also the view of B. T. Kolpakov, chief of the TsSU of the RSFSR, who has spoken out strongly in several places (including an article in *Kommunist*) to the effect that although TsSU opposes the many requests for new reports and new statistics, it too often weakly gives in to the requests. His motivation, I assume, is that this means TsSU has an excessive workload, some of which the ministries could handle.

18. *Vestnik statistiki*, 1968, no. 7, p. 10.
19. Ibid., p. 38.
20. Oblomskii, pp. 58–59.
21. *Vestnik statistiki*, 1968, no. 7, p. 35. See also the suggestion of the head of the Khar'kov oblast' statistical administration to this effect in *Vestnik statistiki*, 1968, no. 1, p. 66.

It may well be that TsSU lacks the capacity to handle what it now is committed to, not to speak of taking on any more jobs. A. S. Butov, head of the Department of Industrial Statistics, states that the 1965 reforms have led to a big increase in the workload on the statistical organs. TsSU is now letting some types of reporting return to the departments. Specifically, in the 1968 plan of statistical work, it relinquished a great deal of the five- and ten-day reporting to the ministries, and also much of the reporting of technical-economic indicators. There are, incidentally, some inconsistencies at successive points in the discussion as to how much was to be given back, inconsistencies which reflect divergences of opinion and a struggle on the part of one TsSU faction to keep from handing over more than absolutely necessary.[22] But I think that the growth of departmental statistics is out of TsSU's control now, and the ministries are doing more and more on their own. Starovskii complains incessantly about "wild" reporting being imposed on enterprises and the duty of TsSU officials to stamp it out. The deputy chief of the Ukrainian TsSU reports that this is a responsibility they take seriously in the Ukraine and that in 1966 his office eliminated 244 unauthorized reporting forms which ministries and departments had imposed on enterprises.[23] But here too TsSU authority was weakened when ministries were given the right to establish "temporary" operating reports, formerly the prerogative of TsSU.[24] Moreover, it is always possible for the departments to do some processing on their own. Since they get copies of all the reports sent to the local statistical agencies, they already have the raw material for doing their own processing.

Who Is to Control the Computer Centers?

During the last ten or fifteen years TsSU has been drawn deeper into the task of mechanizing accounting and computing work. Beginning in 1951, it was assigned primary responsibility for drawing up the plans for mechanizing recordkeeping and computing work in the economy. The scope of its responsibilities is described in the statute it received in 1960 as follows:

> TsSU . . . organizes the work on mechanization of recordkeeping [*uchet*] in the national economy, draws up the plan for mechanization of recordkeeping and computing work, and draws up plans for the organization and growth of machine calculating stations; it

22. *Vestnik statistiki*, 1968, no. 1, p. 5, and T. Volkov, *Vestnik statistiki*, 1968, no. 4, p. 27.
23. *Vestnik statistiki*, 1968, no. 7, p. 30.
24. B. Kolpakov and Sh. Kamaletdinov, *Planovoe khoziaistvo*, 1968, no. 2, p. 18.

> participates in the discussions about types of computing machinery to be produced, about the volume of output and the timing of their production; it verifies fulfillment of the decisions of the government about mechanization; it organizes centralized processing of reporting data with the use of calculating machinery; it is responsible for exchange of experience.[25]

Note that TsSU's authority extends to some involvement in decisions concerning types and production schedules for computing machinery. Some comments suggest that through its function in drawing up the plans, it has some power to impose decisions about the allocation of computing machinery to different uses and organizations.

I believe there have long been other interests which felt that TsSU had too big a role in mechanizing computational work and which were dissatisfied with the results. Their objection is that TsSU has some biases that distort the whole effort in a wrong direction. There are numerous echoes of this feeling in the speeches and discussions at the 1961 conference on the mechanization of computing work, as in the complaints that TsSU officials were not sympathetic to requests for computing machinery to be used for mechanizing engineering-technical computation work, and that their efforts in the training of personnel were biased toward the needs of accounting and statistical operations.[26] Another speaker objected that the TsSU conception of a network of stations under its control, but doing work for enterprises, serves TsSU needs much better than it serves enterprise needs.[27]

The issue has become an ever more serious one as the Russians have gradually come to grips with the computer revolution and set policies for dealing with it. A dominant role for TsSU in this area was confirmed in the 1966 decree on the establishment of a state network of computer centers. (Starovskii likes to put it that the leading role of TsSU in this process is *predreshena* (predetermined), a formula designed to assert that the subject is not open for discussion.) Primary responsibility for the system-design studies for the network was given to TsSU. It is also one of three organs which has to approve plans for any new computer centers (along with Gosplan and the Ministry of Instrument Building, Means of Automation, and Control Equipment). And it is assigned primary responsibility (*rukovodstvo*) for "the work of establishing and operating the state network of computer centers, intended for the collec-

25. *Voprosy mekhanizatsii inzhenernogo i upravlencheskogo truda:* materialy vsesoiuznogo soveshchaniia po voprosam mekhanizatsii truda inzhenerno-tekhnicheskikh rabotnikov i rabotnikov administrativno-upravlencheskogo apparata (Moscow, 1961), p. 210.

26. Ibid., pp. 93, 100, 202.

27. Ibid., p. 236.

tion and processing of economic information and solving the tasks of planning and administration in the national economy."[28] Within TsSU, the systems design work is being done by its Scientific Research Institute for Designing Computer Centers and Economic Information Systems (NII po proektirovaniiu vychislitel'nykh tsentrov i sistem ekonomicheskoi informatsii) of which A. Ia. Boiarskii is the director.

From the beginning, however, there have been strong objections to the concept of a territorially organized, integrated network of computer centers under the control of TsSU. Shortly before the 1966 decree was passed, for example, a spokesman for the Ministry of the Radio Industry (one of the main producers of computing machinery) was saying, "I want once more to suggest that the system [of state computer centers] in our view should not serve for operational management of the economy in a direct line from the highest organs to the enterprise. Branch and departmental systems are intended for this task."[29]

The group at the RAND Corporation which follows developments in Soviet cybernetics finds that this divergence of views, and presumably a parallel struggle over policy, have continued despite the 1966 decree. They conclude that the ministerial preference for a system of branch computer centers is now prevailing over the original concept of a territorially organized system (with its corollary of a very important role for TsSU in its operation).[30] It certainly seems plausible that the responsibility of guiding this effort is too big a challenge for TsSU. For example, it is difficult to think of Boiarskii as a suitable man for directing this work. He is surely a competent statistician, but is a terribly conservative man, whose speeches convey the impression more of a bureaucrat preoccupied with trivia and loyalty to TsSU's interests than of the bold imaginative thinker this job would seem to call for. Nor does TsSU have a reassuring record of handling large-scale tasks of data processing with electronic computers. According to one report, the first such job it ever tackled was the processing of the data from the family-budget studies for 1968 in three republics. That experimental work was never even completed because of lack of personnel, defects in the processing design, and low quality of the primary documents and the punched tapes prepared from them.[31]

TsSU may indeed already have opted out or been shoved aside in this

28. *Resheniia partii i pravitel'stva po khoziaistvennym voprosam* (Moscow, 1968) 6:23.

29. *Ekonomicheskaia gazeta*, 1965, no. 43, p. 23.

30. RAND Corporation, *Soviet Cybernetics; Recent News Items*, no. 19 (1968), p. 69; no. 22, (1968), p. 37; vol. 3, no. 3 (March, 1969), p. 13; and vol. 3, no. 5 (May, 1969), p. 85.

31. I. Matiukha as reported in *Vestnik statistiki*, 1969, no. 5, p. 80.

field. Some TsSU spokesmen are still arguing for a leading role for TsSU in the state network of computer centers.[32] Starovskii's enthusiasm for the task of designing the state network seems to have declined. His standard speech these days says that construction of this network will require the solution of a great many scientific and technical problems, that this work is a matter for the long perspective, and that there are a great many other important jobs for TsSU to concentrate on in the meantime. Furthermore, B. T. Kolpakov has written in *Pravda* that *rukovodstvo* in this process should be assigned to Gosplan.[33] Any involvement with computer policy or performance in the Soviet Union today thrusts one onto a very intense battlefield, and it is easy to understand why Starovskii might like to be out of it.

An Interpretation of TsSU's Role in the System

This review of some recent incidents in TsSU's history can be thought of as reflecting a changing definition of its role, or as an unintended experiment in clarifying what the role of the statistical administration ought to be. The general statement of TsSU's responsibility has not really changed over time. It always was, and remains, to provide the data necessary for drawing up plans and for controlling the fulfillment of plans. But what has happened is that there have been gradual shifts in the idea of how planning ought to be done and in how fulfillment of the plan should be controlled, with corresponding changes in what TsSU is asked to do.

TsSU is subject to the principal requirement for the statistical system in any society, i.e., that its activity and output be congruent with the policy model which it supports. Just as national-income accounting in the United States is tailored to the needs of the macroeconomic stabilization policy process, TsSU's statistical work must be consistent with the much more intricate planning model used in the USSR. What distinguishes TsSU is that it is much more fully integrated into the policy process, which means that it must have less freedom and room for initiative than can statistical organs in other societies. A very large portion of its operations have to be tailored to providing the data input for decisionmaking and policymaking procedures that are already well defined and routinized. It has no room for initiative in conceptualizing some economic statistical measure (such as the value of industrial output) or for choosing the coverage or internal classification of any economic aggregate. Since these statistics are to be used as measures of plan fulfillment, they must be defined in the same way as the indicators of the plan.

32. A. Rapaport, *Vestnik statistiki*, 1969, no. 6.
33. *Pravda*, 17 July 1969, p. 2.

Naturally this means that any flaws in the decisionmaking system will be faithfully reproduced in the kinds of statistics that are generated. If the policymakers think that there are such things as industry A and industry B and that as policymakers they must concern themselves with the relative sizes of these two aggregates, then the statistical system has to accommodate them in their confusion. And the statistics produced for this purpose will be as conceptually obscure as the policy model. Deep-seated maladies in the decisionmaking system propagate festering sores in the statistical system. When the Soviet policy machinery was constitutionally unable to make decisions about agriculture, agricultural statistics supported that inaction. If the planners care mainly how fast material production grows, no argument from Westerners that their national-income statistics are egregiously out of step will have any effect. If the planning system really operates with assignments expressed in gross output, then the statistical system makes no contribution by reporting any different measures of enterprise output.

From one point of view, this subjection of statistics to the policy model is as it should be. Joseph Berliner has suggested that the last thing one wants is a "creative statistician." The formulation and conceptualization of economic issues is a matter for the planner and the theoretician, and to the statistician should be assigned the passive role of producing the data that the planner says he needs. This point gains weight when we realize that since statistical systems once established are hard to change, it is vital to think out clearly in advance what is needed. But I find it a little difficult to accept this idea in full. Abraham S. Becker has pointed out that this argument is similar to the issue whether the intelligence function ought to be controlled by the gatherers or the users. For good and sufficient reasons it is not wise to opt unequivocally for the users, and I think the same kinds of reasons apply to economic statistics.

In any rationally organized social control process, one of the functions of the statistical system probably ought to be to act as a kind of search system. It should be expected to turn up unexpected facts and information that policymakers were not aware they needed. One of the general conclusions many have reached about Soviet-type economic planning is that it is too much focused on specific goals and formulates, scans, and evaluates too few alternative means. The Soviet statistical system faithfully reflects this weakness, but could play a very constructive role in altering perceptions and assumptions if its mission were conceived and its operations directed with that goal in mind. In those areas where the Soviet statistical organs have had some freedom to initiate new ideas or to search for new kinds of information, as in the various censuses, they can reveal important information and draw attention to areas of

great importance for policy, as in the case of the large amounts of unutilized labor revealed by the 1959 Population Census. I would judge that TsSU's subjection to the planning model has left it with too little independence and initiative in this respect.

If we examine the instances where some new policy problem has become important and ask how the new statistics were produced to deal with it, we usually find TsSU firmly established at the *khvost*. In the middle fifties, when the Russians were planning the reorientation of their fuel policy, two big data foundations needed were data on oil and gas reserves and information on fuel balances. It is interesting that for neither of these was the responsibility given to TsSU. Gosplan did the first fuel balances, and the geological-research organizations developed the reserves statistics.[34]

As policy attention has shifted to problems of technical progress, the Russians find that they have very little good statistical information on crucial aspects of this process—the payoffs, the organizations doing the work, and so on. Everything I have seen that is in any way detailed or exploratory is done by others, who put together their own statistics. Only in the plan of statistical work for 1969 did TsSU introduce for the first time some new tasks in this area—a survey that would cover both independent design bureaus and those on enterprise balance sheets, and a new processing of data that they already have, to show geographic distribution and distribution by size of research organizations.[35] If you think that those do not sound like very exciting novelties, I can only say I agree with you.

Implications for TsSU of Possible Planning Reforms

Turning from the past and looking to the present and future, the next question is how the changes in the system for managing the economy now taking place or being discussed would affect the statistical function and what kind of implications they have for TsSU's future. I will first discuss this in rather theoretical terms and then try to see how the Soviet statisticians seem to assess and react to the prospects.

The Perfectly Centralized Model

It is convenient to think of three general lines along which the Soviet planning system could develop. The first of these is the strongly cen-

34. Reserves statistics had long been neglected by TsSU. When it had been under Gosplan, it had apparently dropped them altogether, and this was cited in 1948 as an area in which its work had to be improved. Exactly the same kind of criticism was made at the 1957 conference of statisticians; presumably it had done very little in the intervening decade.

35. A. Levashev, *Vestnik statistiki*, 1969, no. 3, p. 24.

tralized system depending on highly formalized computational models and tremendous amounts of data transmission and processing. The possibility of such an outcome must be a very frightening thing for TsSU to contemplate. The needs for information in such a model are tremendous, but I doubt that one would want an organization like TsSU to be collecting the information. In something like the Kornai-Liptak model or that which V. F. Pugachev once sketched,[36] the link between information passed down and that received back is much closer, and the functions of drawing up plans, monitoring their fulfillment, and adjusting them in the process of fulfillment are much more closely integrated with each other than even in the present system. I think that it would be very difficult for TsSU to be involved in this without becoming totally absorbed or dominated by Gosplan. If it were to have control of the computer network that collected and processed the information, it would have to design the network and employ it in a way totally at variance with its past experience. The very idea of information that this kind of system employs is in many ways quite different from the kind of material TsSU has been concerned with in the past. There is an interesting article in which a cyberneticist tries to make clear that in this conception of control, information means something quite different from the "data," "indicators," and "reports" in terms of which the statistical organizations think.[37] Another way to think of it is that when attention shifts to an optimizing model, what is needed is schedule information, information on possibilities, rather than the *ex post* information that served a model that often overlooked choices or took for granted the choices implicit in past behavior. I doubt whether TsSU could make that kind of adaptation. It would probably have to be recreated—broken up, reorganized, restaffed —with all the trauma and resistance which that would mean in an ongoing bureaucracy. It would probably be simpler to build a new organization within the planning organization.

If such a model could really be designed, there would not be much left for an independent TsSU to do. It could still collect traditional kinds of statistics, but it would be quite remote from the policy process and there would always be a question of what its output was useful for, since everything important was already taken into account in the optimizing model. But I do not believe that Starovskii and company need worry seriously about this prospect: the establishment of this kind of planning system is very unlikely.

36. V. Pugachev, *Voprosy ekonomiki*, 1964, no. 7, pp. 93–103.

37. Iu. I. Cherniak, "Razrabotka sistemy ekonomicheskoi informatsii," in ANSSSR, *Sistemy ekonomicheskoi informatsii* (Moscow, 1967).

The Market-Socialism Model

A second line of development would be what I will refer to as market socialism, though our present concept of market socialism differs considerably from the classic Lange-Lerner concept. The basic ideas—a great deal of enterprise autonomy and freedom to respond to price signals—remain central. But it seems to me that in any real-life market-socialist systems that emerge, the role of the central planning board would be not so much to juggle prices (indeed, prices are more likely to emerge mostly from market bargaining) as to operate macroeconomic controls and to employ a varied collection of fiscal and other micropolicy instruments to supplement market forces as the environment to which enterprises react. This evolution would mean that Soviet planning would become differentiated into two distinct elements more than it now displays—(i) decentralized operations and decisionmaking, based on information which the enterprise would sense out itself by exploring the environment, and (ii) a global policy mechanism at the top that would seek to improve on the results by manipulating the environment of enterprise decisionmaking.

Such a radical change in the system would call for a similar reorientation in TsSU work. The very concept of operational statistics would become meaningless, and there would be no need to collect the detailed and frequent data that planners in the past thought they had to have at hand and react to. The old TsSU standardization could be abandoned, and for the first time the enterprise would be able to organize its internal recordkeeping system to meet its own needs.

TsSU would still have an important function—i.e., to gather the information needed to operate the central planning or policy model. But these statistics would be concerned with different matters than in the past. The various kinds of macroeconomic information required are obvious. In addition, TsSU would now have also to gather information on all the kinds of results flowing from enterprise autonomy that might be subject to policy intervention; regional and sectoral wage levels, differences and trends; the dynamics of all those things the Russians call economic instruments—prices, profits, credit; such things as capital-output ratios or other general economic magnitudes important for development strategy. But much of this kind of information would be collected in a different way. It could come from infrequent ad hoc surveys; there could be different periodicities for different kinds of surveys, not tied to some fixed planning cycle. More of it could be obtained through sample surveys, and exhaustive enumeration would be avoided. All the concepts and designs could be more flexibly formulated

and could change. The statistical organs would also give a lot more attention to the kind of information that is used in forecasting models of planning; that is, they would generate the kind of information that the enterprise may be unable to garner for itself through its involvement in the market—investment plans, technological trends, etc.

This differentiation into two levels would free Soviet statistical work from the kind of constraints that its present role in the operational model imposes, and it could become more useful, more interesting, and more innovative. One of the problems in the Soviet system has always been the principle of a "unified system of national-economic record-keeping" (*edinaia sistema narodnokhoziaistvennogo ucheta*)—i.e., the idea that one set of statistics had to serve all purposes. This methodological unity had serious drawbacks. Considered just in terms of concept, the constant-price industrial-output statistics cast in terms of gross output could probably be justified as a kind of measure adequate to the needs of higher-level planning and policymaking. But the same statistics were also used for controlling enterprise performance, with the adverse impacts on enterprise decisionmaking with which we are all familiar. And because of these enterprise reactions, their de facto meaning changed from the original concept and made them misleading for planning and policy purposes. For example, because of enterprise manipulation they were not really constant-price figures. Such examples can be easily multiplied. One might argue that the solution would be to find a "true" measure of output growth which could be used for both these purposes without causing any distortions. I doubt if this kind of solution is possible, my position being based on a belief that "perfect administration" of an economy is unachievable and that there cannot be a single deterministic national-economic optimizing model. In the systems concept of a hierarchical control system there have to be some failures of closure in conceptualizing the process at different levels, and a corresponding eclecticism in the way statistics are put together for different purposes.

To some extent TsSU has already been moving in recent years in the direction this model would require, and there seem to be a lot of people in the organization who would like to see it move farther in that direction. The revival and extension of its budget studies, the increased emphasis on censuses and surveys and on sampling approaches to generate information to meet *ad hoc* needs—these are examples. Boiarskii says that a group in his institute has recently begun to develop forecasting data (*kon'iunkturnaia informatsiia*).[38] TsSU is beginning to try some in-house analysis and manipulations of its own data. Ever since 1961 the Scientific Council on the Economic Effectiveness of Capital Investment and New Technology of the Academy of Sciences has been studying the theme

38. *Ekonomicheskaia gazeta*, 1969, no. 6, p. 15.

indicated in its title, but never with any participation from TsSU until 1969, when a TsSU representative reported on some manipulations they had made of TsSU data to determine the effectiveness of capital investment.[39] It is interesting, incidentally, to see how relatively simple-minded the TsSU approach is and how hostile economists from outside TsSU are.

In general, TsSU does not move into new areas or try new approaches eagerly. A good illustration of this reluctance is their reaction to the hot potato they were handed in the Central Committee decree of August 1967 on the social sciences. One provision of that decree was that TsSU should work out with Gosplan and the Academy of Sciences a scientifically substantiated system of statistical data necessary for social research and should summarize and arrange for their publication. TsSU has often been criticized for not collecting such data, especially as it had done so in the 1920's, before it was absorbed by Gosplan.[40] Social statistics, including public-opinion sampling, is a subject of tremendous interest in the Soviet Union, and a lot of people have been collecting such data on their own—newspapers, research organizations, trade organizations, and so on. As one might expect, this is the kind of subject that would appeal to some of the younger staff of TsSU, and to judge from the report on a symposium they initiated at TsSU, they want to be bold and innovative.[41] But social statistics can involve delicate political and ideological sensitivities, and older and wiser heads will make sure that TsSU proceeds very cautiously. Ezhov was especially indignant at a resolution adopted by a conference of sociologists which called for collection of a great deal of personal data, including information on "deviant behavior."[42] Boiarskii has an interesting article discussing the kind of data that it might be useful to collect, even including some on opinions. All his examples are sensible enough, but thoroughly neutral. He suggests, for example, that data on length of hospital stay would be useful and it would be all right to include a query on the respondent's opinion concerning the care he received in the hospital. The leaders of TsSU would very much like to be completely out of this battlefield, and one has suggested that they ought not to collect such data. He suggests that a special new institute ought to be organized to do this kind of work, with TsSU only overseeing the scientific validity of its procedures.

But the important thing is that for all their slowness, the statisticians of TsSU are moving in the direction of the kind of work consistent with the model described above.

39. See the series *Metodika i praktika opredeleniia effektivnosti kapital'nykh vlozhenii i novoi tekhniki.* No. 15 contains the TsSU report and the discussion of it.

40. *Vestnik statistiki,* 1968, no. 7, pp. 29–30.

41. Iu. Vasil'ev, *Vestnik statistiki,* 1968, no. 11, pp. 76–83.

42. *Vestnik statistiki,* 1968, no. 7, pp. 29–30.

The "New Industrial State"

The third model is a hybrid system, combining elements of both the above, and in my view much more likely as an outcome than either of them. It would resemble the market-socialism system in moving authority down from the center, but to very large branch or conglomerate units rather than to enterprises. A lot of the interactions and relationships among these units would be handled by lateral communication and negotiation, rather than being coordinated in detail at the center. It is this crucial role of the big corporation in all systems of decisionmaking that leads one to think of it as a socialist form of the new industrial state. As in market socialism, the center would still be there to provide a check on the decisions made by the big corporations, but this kind of environment would call for the center to give its attention to different problems and to use different instruments. As examples, if the small size of enterprises in the market-socialism model might call for the center to concern itself with technical progress, that might be less necessary in this one. And in this hybrid model, concern with and instruments for controlling monopolistic behavior would be extremely important. On the other hand the hybrid model would resemble the perfectly centralized system in that the method of managing the big corporations would be much more elaborate than in simple enterprises and would be analogous to that envisaged for the central planning system in the fully centralized model.

The implications for TsSU, should this be the outcome, are similarly a blend of those already discussed. It would not have much of a role to play in the branch systems of administration. Data-processing centers would be under branch rather than TsSU control and would involve information different from that which TsSU specializes in. A preview of the kind of data-gathering and -processing systems likely to be set up in these big units is available in the management systems now being established in some of the ministries and combines (*ob"edineniia*). Usually referred to as "automatic systems of administration" (ASU or ASUP), they involve a lot of automatic data gathering, processing, and control procedures, depending on computers and control-theory models. To judge from the discussion and descriptions of these systems, they involve new kinds of information, recasting of primary documentation, and new concepts and definitions of various economic magnitudes.

Indeed, it is the possibility of using such new approaches that is one of the justifications for the new model. Consider such activities as construction and research and development. At the present time those activities are planned and controlled in terms of TsSU-type statistics. In research and development there are plans and matching statistics for

the number of scientific workers, sources of finance, cost budgets, number of new machines to be put into production, etc. In construction there are statistics on volume, labor force, inputs, capacities to be commissioned, etc. But for all its detail, this approach achieves highly imperfect control. There remain big stocks of unfinished construction, cost overruns, completion delays, etc., all nicely reported in the statistics. The research budgets are fulfilled (i.e., spent), the planned number of *temy* have been researched, the planned number of new patents have been issued, the planned number of new models have been introduced (just count 'em!), but in the real world there has been minimal technical progress. Though many Soviet observers have reached the conclusion that the problem is to shorten the cycle *nauka–proizvodstvo*, i.e., from research to production, there is nothing in the statistics that refers to this cycle in an integral but articulated way.

What is being done in some areas already, and what the ministerial systems would do on a still larger scale, is to achieve real operational control over these processes by using network methods such as PERT (which the Russians call *setevoe planirovanie i upravlenie* or SPU). SPU works with a different kind of plan; i.e., it is much more addressed and more detailed, the adjustment cycle is shorter, and the information that flows upward is different from the kind that TsSU gathers. Under SPU, management is not primarily interested in the value of construction put in place in a certain period or whether the research budget has been fully spent, but whether the successive steps are being completed on schedule and how resources should be shifted in the light of any changes in the situation.

In this model what would be left for TsSU to do would be to collect the information for the higher-level policy model. And these statistics would be much like those described for the market-socialism model, but with due allowance for the differences in the central policy function.

To be specific, I see two ways in which TsSU would find itself in quite a different situation from that of the market-socialism model. (i) It would have a harder time than ever getting inside the information systems of the big corporations and getting reliable information from them. The feature of the new industrial-state model that differentiates it from the market-socialism model is that the units will be big enough to really threaten the center. Secrecy will be one of their important weapons in doing so. And technically it will be easier for them to control access to information than it has been in the past, because they will be administering the computer centers and the reporting forms. They can always argue that they have to decide such issues as how a given number is defined if they are to be able to make imaginative use of their computer

centers. (ii) What kind of policy issues the center ought to concern itself with, and what kind of information it needs for that purpose in this kind of a system, are not so obvious from the experience of others as in the market-socialism model. If this kind of evolution is taking place in the Soviet Union, it is happening not so much because someone planned it that way from the top as because the ministries are just winning out in the present bureaucratic struggle. And if it is true that the United States has made a qualitative leap from the managed-market system to the new industrial state, we certainly do not yet know what kind of policy model can be devised or what kind of statistics will be needed if we are to impose our social will on it. What would be left for TsSU to do in this kind of model is thus very hard to define, except that it will have to be much more flexible, creative, etc., than in the past. If this is indeed to be the evolution, TsSU is in for some rough times from the central policymakers, since they will need its advice and imagination more than ever in the past.

The Views of Soviet Statisticians

Looking over the recent statements made by Soviet statisticians, I conclude that they are well aware of these implications, are thinking more or less along the same lines, and are much at odds over how TsSU should evolve. Starovskii recognizes that "the development of statistics is indissolubly linked with the prospects for the development of the whole system of economic information in the country."[43] The 1965 reforms in particular were the occasion for much thought about how statistics ought to be modified to reinforce and ensure the success of the reforms. Many changes in the definition of indicators and in kinds of information collected have been made to conform to the changes in planning. Apparently, however, the statistical authorities have been thinking quite a bit beyond that immediate horizon. Starovskii says that two viewpoints exist on the future of the statistical service. One group thinks that the volume of statistical information must be expanded manyfold. He refers to these people as *uchenye*, so presumably he is talking about the new economists, especially those who see perfect centralization as the coming thing. He rejects this as an extreme point of view that exaggerates how much information is really needed to plan and manage the economy. The other view (and it is interesting that he lays it mainly to some statisticians) is that TsSU ought to give up altogether its role as collector of operating

43. V. Starovskii, *Planovoe khoziaistvo*, 1967, no. 7, pp. 19–20.

information and as a participant in the control of plan fulfillment and concern itself with much broader kinds of issues, more general kinds of statistics, more profound analysis of what is happening in the economy. The idea that TsSU should do more analysis of the data it collects is of long standing, but there is no perceptible shift in that direction. (Here, too, there is a parallel with the intelligence function, where there is always a dispute whether analysis should be the responsibility of the gatherers or the users.) These people are also ready to redefine the relationship between the statistical administration and the ministries in the collection of information. One would not want to trust Starovskii's interpretations completely, but we can certainly confirm that some statisticians seem to want a greatly reduced role for TsSU. I have already referred to some examples earlier, but want to adduce here particularly the views of B. T. Kolpakov. What makes them important is that they are expressed in *fora* with political significance—*Kommunist* and *Pravda*—rather than only in media intended for a more specialized technical audience.

Kolpakov's statements combine all the elements of a hybrid-model view of the TsSU role. He questions the virtues of centralization of statistics, thinks that TsSU should concern itself with more general and aggregative indicators, should do less collecting and more manipulation and analysis to produce information to guide general policymaking. In the most recent statement, made jointly with a deputy chairman of Gosplan, he goes so far as to give away the computer centers to the branches and permit branches to differentiate their reporting systems to meet the distinctive needs of the branch. One of his least explicit suggestions, but one with extremely interesting implications, is that TsSU would do its statistical work by retrieving from the branch computer centers the raw material for producing the kind of statistics for which it would be responsible. These views, of course, are in direct contrast to Starovskii's insistence that TsSU stand firm on the principle of centralization.

This controversy should probably be evaluated not in terms of which kind of statistical service would be most effective but as a reflection of the struggle for power between the Center and ministries—i.e., between the political elite and the managerial class. TsSU has generally been on the side of the politicians in this conflict, but Kolpakov seems to have let himself become the spokesman for a ministerial or managerial point of view. It will be interesting to see whether he does not replace Starovskii before long to preside over the reorientation of TsSU. I do not offer to take bets, and do not want to imply that causality runs from how statistics is organized to who has political power. Indeed the whole point of the

paper has been that causality runs in the opposite direction. We can find in the evolution of the statistical system clues that help to clarify what is happening with regard to more fundamental matters such as political power and the policy model, and it is that fact that makes the present uncertainty on the role of TsSU so interesting.

3

Michael Kaser

The Publication of Soviet Statistics

The Central Statistical Administration

Any consideration of the Soviet record in publishing statistics must largely center upon the practices of TsSU. No country in the world has vested more power than the USSR over data collection and publication in its specialist statistical agency. The mere degree of centralization is not unique—the Central Statistical Office of the Netherlands, for example, similarly monopolizes data collected by other government departments—although it so happens that most of the industrialized market economies have in this regard grown piecemeal.[1] The unique aspect of TsSU is its ministerial status and the record tenure of its head. Established only a few months after the October Revolution, TsSU was in mid-1918 accorded the administrative position of a People's Commissariat; in 1926 its head became a full member of the Council of People's Commissars (after 1946, Council of Ministers).[2] Eastern European copies of TsSU, set up when the Soviet planning system was adapted,[3] have not been accorded equivalent rank. Furthermore, of the forty-five years during which the head of TsSU has been a minister, one man has held office for thirty-one years: Vladimir Nikonovich Starovskii, the present incumbent, was appointed in 1940.[4] His sole rival for the continuous tenure of a ministerial portfolio, Arsenii Zverev, minister of finance since 1938 and

1. Though with considerable differences: the French and the Canadian statistical services are more centralized than those of the United States or the United Kingdom (which since 1967, as a consequence of the Jackson Report, has made considerable progress in concentrating operations in the Central Statistical Office under a new director, C. Moser).

2. For a concise history of TsSU see G. Grossman, *Soviet Statistics of Physical Output of Industrial Commodities* (Princeton, N.J., 1960), chap. 1.

3. For their titles and their place in the economic organizations of those countries, see M. Kaser and J. Zieliński, *Planning in East Europe* (London, 1970).

4. It is not clear whether, as deputy chairman of Gosplan (the State Planning Commission) of the USSR, the head of TsSU throughout retained a seat on the Council, because the constitutional provision and practice diverge: under the (Stalin) Constitution of 1936, on this point unamended, only the chairman of Gosplan is *ex officio* a member, but there have been (in 1962) as many as six deputy chairmen on the Council by cooption. See L. G. Churchward, *Contemporary Soviet Government* (London, 1968), p. 136.

in age five years his senior, retired in 1960,[5] while Anastas Mikoyan—who is ten years older and retired in 1964—aggregated twenty-five years with a portfolio (twenty-three of them continuously) and twenty-five years, mostly overlapping, as deputy chairman of the Council of Ministers (eighteen of them without a break). Stalin, it may be recalled, though General Secretary of the Communist Party for thirty-one years, held governmental office for only three years as commissar for nationalities, and for twelve as chairman of the Council of Ministers, while Mikhail Suslov—three years older than Starovskii—has the longest tenure (twenty-three years) of the present secretaries of the Party Central Committee.

To recite the extent to which Starovskii has outlasted any other holder of ministerial or equivalent Party office is perhaps already emphasis enough, but it is informative to add that his position is no reward for "Old Bolshevik" service, as is the case for all the others named above,[6] because he became a Party member only a few months before nomination as head of the statistical service he had joined in 1925 as a man of twenty. Furthermore, within a year of that appointment he was able to regain the title of TsSU—abolished in 1930 and reformed as TsUNKhU, attached to Gosplan[7]—and in 1948 to have it again endowed with the independence it has had ever since.[8]

As this chapter seeks to show, the program of TsSU on publications has been influenced by the personal attitude of its head, subject to occasional overriding decisions from the summit of political power. Stalin had already determined upon general secrecy before Starovskii took office, and Khrushchev ordered resumption of open publishing at the time of the Twentieth Party Congress in 1956. During the Stalin blackout the only regular statistical statements were the reports on

5. Zverev had in fact a break in his service, having had to cede his ministry to Aleksei Kosygin between February and December 1948; this fact was suppressed in his biography in *Bol'shaia sovetskaia entsiklopediia,* 16 (Moscow, 1952): 563, and in his obituary in *Den'gi i kredit,* 1969, no. 9, p. 96.

6. Nor, like his purged predecessor I. A. Kraval', had he played a significant role on Stalin's side in the industrialization debate on the eve of the First Five-Year Plan; on Kraval', see E. H. Carr and R. W. Davies, *Foundations of a Planned Economy* (London and New York, 1969), passim. Kraval' does not seem to have been rehabilitated, as were many others who were purged at that time. The alignment of the predecessors of Kraval' in the chairmanship of TsSU, V. Miliutin and N. Osinskii, more against than for Stalin in the twenties, can also be judged from Carr and Davies's account.

7. Central Administration of National Economic Recordkeeping attached to the State Planning Commission of the USSR: Starovskii was from the first a deputy chairman of the Planning Commission.

8. The politicoeconomic changes of 1941 and 1948 from which TsSU benefited are still obscure. Grossman, pp. 17–19, sketches the background in relation to TsSU, and the present writer, M. Kaser, "Le débat de la loi de la valeur en URSS," *Annuaire de l'URSS* (Paris, 1965), pp. 555–69, has attempted a chronology in the light of the history of Soviet economic thought.

the fulfillment of quarterly or annual plans, the targets of which were never systematically published. A few goals or their fulfillments in actual terms were occasionally furnished in the speeches of Party leaders or government ministers (e.g., at the celebration of the October Revolution or to the Supreme Soviet on presentation of the budget), and there were only two years for which plan targets were specified at length—1941 and 1947.[9]

Phasing Out Before World War II

Two stages can be described in the prewar practice of statistical publication. The first was the suppression in the late twenties of statistical reporting other than by TsSU. At that time not only did other departments of state issue their own statistics but so did even a nongovernmental body such as Tsentrosoiuz, the All-Union Cooperative Union: its journal, *Soiuz potrebitelei,* comprised a regular statistical appendix. The general economic press (notably *Ekonomicheskoe obozrenie*[10] and *Sotsialisticheskoe khoziaistvo*[11]) and the organs of Gosplan (*Biulleteni Gosplana*),[12] the Commissariat of Finance (in *Finansy i narodnoe khoziaistvo*),[13] the Commissariat of Agriculture (in its organ *Puti sel'skogo khoziaistva* and *Sel'sko-khoziaistvennaia zhizn'*), and the Conjuncture Institute (*Biulleten' koniunkturnogo instituta*) were other systematic channels of data publication, frequently differing in presentation and estimation to the extent that their sponsors held divergent views on public policy. The wealth of material was at its peak in the economic year 1923/24, for which there were not only three abstracts (*Narodnoe khoziaistvo SSSR v 1923/24, Statisticheskii ezhegodnik 1923/24,* and *Khoziaistvennye itogi 1923/24*) but also the first input-output table, *Balans narodnogo khoziaistva Soiuza SSR 1923/24 gg.,* published over the name of the then head of TsSU, P. I. Popov.

The years in which the various series continued to appear are listed below; the annual plan document ("Control figures") is included because of its retrospective reporting:

Khoziaistvennye itogi 1923/24 (1925).

9. It is tempting to relate the publication of a brief sketch of the annual plan for 1947 to the new policy, soon checked, of Zhdanov and Voznesensky (see Kaser, "Débat"). The 1941 Plan outline, in a speech by Voznesensky, was a tiny extract from a volume which later became available in the West after its discovery among documents captured by German troops during the invasion of that year.

10. This was replaced in March 1930 by *Ekonomicheskaia zhizn'*, with virtually no regular statistics.

11. This also suspended publication with the third issue of 1930.

12. Merged with *Planovoe khoziaistvo* (the sole economic journal of those days other than that of TsSU which continues to the present) in 1929.

13. Ceased publication with issue 36 of 1931. On the termination of the State Bank's statistical monthly in 1932, see Powell's discussion in Chapter 17 below.

Kontrol'nye tsifry narodnogo khoziaistva SSSR: 1925/26 (1925), *1926/27* (1927), *1927/28* (1928), *1928/29* (1929), *1929/30* (1930), and *1930/31* (1931).

Kratkii statisticheskii sbornik (1936).

Materialy po balansu narodnogo khoziaistva SSSR za 1928, 1929 i 1930 gg. (1932).

Narodnoe khoziaistvo SSSR v 1923/24 (1924); ibid. *v tsifrakh* (1925); ibid. *za 1927 god* (1928); and *1932* (1932).

Sotsialisticheskoe stroitel'stvo SSSR (1934), (1935), (1936), and (1939).[14]

SSSR—strana sotsializma; statisticheskii sbornik (1936).

SSSR v tsifrakh (1934), (1935).

Statisticheskii ezhegodnik na 1918–20 gg. (1922), *1921 g.* (1922), *1922 i 1923* (pt. 1, 1924, and pt. 2, 1925).[15]

Statisticheskii spravochnik SSSR za 1927 god (1927), *za 1928 god* (1929).

When general statistical abstracts were resumed in 1956 the choice of title for the full abstract fell on *Narodnoe khoziaistvo*, a title which had been used for a series of volumes in 1914 and 1916 and for the concise abstract on *SSSR v tsifrakh*. The title of the tsarist government's abstracts, *Statisticheskii ezhegodnik* (*Rossii*), was used only in the immediate aftermath of the Revolution.

Further statistical data appeared in the organs of TsSU: *Biulleten' TsSU* (1919–26), superseded by *Statisticheskoe obozrenie TsSU* (1927–30), and *Vestnik statistiki* (1919–29). Both were merged into the organ of Gosplan when TsSU was combined with the latter: *Vestnik statistiki* reappeared in 1949 when autonomy was resumed, but did not include statistical appendices until 1956. A monthly statistical abstract, *Ezhemesiachnyi statisticheskii biulleten'*, whose editor was a noted statistician, Professor I. V. Kafengauz, appeared from 1924 until 1928.

The merger of TsSU with Gosplan in 1930 amalgamated the only two agencies which by then were publishing regular statistics, and the monopoly was complete.

The second phase, the disappearance of the TsSU abstracts, may strictly be considered as beginning with the cessation of the monthly bulletins just mentioned, but annual publications were numerous until 1936. Nevertheless, just as Stalin in 1933 claimed that "the state will wither away, not as a result of weakening state power but as a result of

14. Title adapted to *Soiuza SSR* for *SSSR*.

15. A summary volume 1918–24 appeared as *Trudy TsSU SSSR* (cited below as *Trudy*), vol. 8; the same series also comprised *Statisticheskii sbornik, 1913–17, 1921–22, Trudy*, vol. 7.

strengthening it to the utmost,"[16] so statistical publications flourished and expanded in the first half of the thirties, only to be annihilated in the second half. The prime example is the enlargement of *Narodnoe khoziaistvo SSSR, 1932* to the successive volumes of *Sotsialisticheskoe stroitel'stvo* for 1933, 1934, and 1935. Since the 1932 abstract[17] was in smaller format and in antiquated typeface and layout, while the later ones had much larger pages and more widely spaced tabulation, a quantitative comparison must necessarily be inexact: one's impression is that the latter comprised about one-fifth more information. Two issues of the abstract on female activity, *Zhenshchina v SSSR*, appeared before the war (1936, 1937) and reappeared in 1960; three more issues appeared in 1961, 1963, and 1969 under the title *Zhenshchiny i deti v SSSR*.

A series of abstracts furnished fuller details on specific sectors.[18] Given the greater control over the reporting enterprises (the statute of TsSU compels all state-owned entities to supply statistical and accounting data on request)[19] and with collectivization, they tended to be fuller than the haphazard sectoral compilations of the twenties.[20] Table 3.1 shows the prewar issues and dates of their postwar republication.[21]

The peak years for statistical supply, aggregating general and sectoral books, were 1934 to 1936; it is perhaps sufficient commentary to observe that the period was characterized by Naum Jasny as "The Three Good Years," following "The All-Out Drive" and preceding "The Purge Era."[22] From 1936 until the war there was only one general abstract and three sectoral abstracts (on agriculture), all very much abbreviated, and two retrospective volumes, concluding their coverage in 1937 and 1938

16. J. V. Stalin, *Sochineniia*, 13 (Moscow, 1955): 215.

17. Which appears to be the last abstract to have been jointly published in Leningrad; all later TsSU series show solely a Moscow origination.

18. In the classification adopted here and in the present writer's annual lists of Soviet statistical abstracts (*Soviet Studies*, vols. 10–21, Jan. 1959 to Jan. 1970), "sectoral" covers branches of economic, electoral or social activity, although demographic handbooks (including those dealing with the occupational distribution of females and related matters) are treaded as "general."

19. See the summary in *Bol'shaia sovetskaia entsiklopediia*, 46 (Moscow, 1957): 537. This was the 1951 statute; on changes made in 1961, see below.

20. These were *Ezhegodnik khlebnoi torgovli 1925/26–1926/27* (Moscow, 1928); *Ezhegodnik khlebooborota 1928/29* (Moscow and Leningrad, 1931), and ibid. *1929/30–1930/31* (1931); *Sbornik statisticheskikh svedenii po gornoi i gornozavodskoi promyshlennosti SSSR za 1925/26 god* (Leningrad, 1928), ibid. *za 1926/27 god* (Leningrad, 1929), and *za 1927/28 god* (Moscow and Leningrad, 1930), of which an earlier issue is noted under "Historical Series" below; *Soiuznaia promyshlennost' v tsifrakh* (1929); *Osnovnye elementy sel'skokhoziaistvennogo proizvodstva SSSR 1916 i 1924/27* (1930); *Tovarooborot za gody rekonstruktionnogo perioda* (1932); *Kolkhozy vo vtoroi Stalinskoi piatiletke, statisticheskii sbornik* (1939); *MTS vo vtoroi piatiletke* (1939); and *Proizvoditel'nost' i ispol'zovanie truda vo vtoroi piatiletke* (1939).

21. Foreign-trade statistics are discussed separately below.

22. Naum Jasny, *Soviet Industrialization, 1928–1952* (Chicago, 1961).

Table 3.1. Statistical abstracts of TsSU resumed after World War II

Title	*Prewar*	*Postwar*
Kul'turnoe stroitel'stvo SSSR	1935, 1937, 1940	1956
Posevnye ploshchadi SSSR	1939	1957 (2 vols.)
Promyshlennost' SSSR	1925, 1926, 1927, 1928, 1930	1957, 1964
Sel'skoe khoziaistvo SSSR[a]	1929, 1935, 1939	1960
Sovetskaia torgovlia	1936	1956, 1964
Trud v SSSR[b]	1926, 1932, 1934, 1936	1968
Zdravookhranenie SSSR[c]	1936	1956, 1957, 1960
Zhivotnovodstvo SSSR	1940	1959

a. In 1939 the title was preceded by the word *Sotsialisticheskoe.*

b. Accompanied in 1936 by *Chislennost' i zarabotnaia plata rabochikh i sluzhashchikh v SSSR.*

c. The title differed slightly in 1936; for this and a list of medical statistical publications, see F. Lorimer, *The Population of the Soviet Union,* (League of Nations: Geneva, 1946), pp. 278–79.

respectively: these are noted below under "Foreign-Trade Statistics" and "Historical Series" respectively.

As already briefly mentioned, the sole regular statistical publication until 1956 was the annual and quarterly plan-fulfillment report. A single harbinger of change emerged in 1955—*Pechat' SSSR v 1954 godu,* a compilation on publishing (issued not by TsSU but by the Ministry of Culture)—but data on economic or social activity in general awaited the release ordered by the Twentieth Party Congress.

The Statistical Thaw

As in the vaster field of political destalinization, the reopening of statistical publication was a consequence of domestic pressure, in that case from economists and economic officials whose ability to analyze Soviet development was seriously impeded by the restriction of data circulation; a new official-secrets act of 1947 had indeed increased the penalties and broadened the crime of unauthorized disclosure. The terminal dates of that pressure were the conferences of statisticians in 1954 and 1957[23]: in between, the benchmarks are the Twentieth Party Congress (February 1956)[24] and the meetings between then and October of heads of republican statistical administrations[25] and of statisticians of the People's Democracies.[26]

23. Reported respectively in *Vestnik statistiki,* 1954, no. 5, and in *Vsesoiuznoe soveshchanie statistikov 4–8 iiunia 1957 g.* (Moscow, 1959).

24. *KPSS: XX S"ezd,* stenograficheskii otchet (Moscow, 1956).

25. *Vestnik statistiki,* 1956, no. 5.

26. Described by V. Starovskii, *Kommunist,* 1957, no. 14.

The convocation of the statisticians' conference of 1954 was in itself a concession to pressure, and everyone who was anyone in the field attended. Judging by the published report, only what was termed "the objects and content of statistical science" were debated, but the informal corridor discussions may be conjectured as the start of the movement towards liberalization. The decisive moment was, of course, the criticisms at the Party Congress of Khrushchev and Mikoyan, mentioning "comrade Starovskii" by name: the first general statistical abstract since the war was sent to press within six weeks. Even more speedily, *Vestnik statistiki* carried a self-criticism by Starovskii in which he put first among "the errors committed during the period of the cult of personality" that "economists did not have access to statistics," following that with the divorce of teaching economics from practical knowledge of the economy and the fact that textbooks had had to use "outdated or hypothetical statistics."[27] He promised that the new statistical handbook would fill some of the gaps and announced that the local organs of TsSU would produce abstracts for republics, krais and oblasts. He made a major concession to "economists in the Academy of Sciences, research institutes and universities," who he said should be "attracted into the work of TsSU." In retrospect, the academician whom he had in mind was certainly Nemchinov.[28]

Controversy Within TsSU

Starovskii called together his field directors, and the forthcoming publication of a series of regional-sectoral abstracts was announced.[29]

What support Starovskii gained from his local chiefs can only be surmised, but it is a viable theory that they were at his side in counter-attacking the political authorities with a demand for more independence. The parallel of regional party support for Khrushchev in the confrontation of June–July 1957 should not be forgotten, but it is a fact that when the TsSU Statute of October 1951 was revised in 1960 the local organs of TsSU were to be only nominally subordinated to the appropriate territorial authorities and were wholly financed from the Union budget,[30] the transformation of TsSU into a union-republican organization having taken place in 1959. Certainly TsSU was to gain from the devolution of industrial administration of 1957; the scheme to use TsSU as a central control when the industrial ministries were abolished figured in the very

27. *Vestnik statistiki*, 1956, no. 2, esp. pp. 24–25.

28. Vasilii Sergeevich Nemchinov (1894–1964) had been created academician in the brief economics "renaissance" of 1946; he had been director of the Statistics Faculty 1928–40 and director of the Timiriazev Agricultural Academy in 1940–48. He lost his post, but fortunately no more, after opposing Stalin's requirements on Lysenko's biological theory. As is shown below, Nemchinov was the spokesman of statistics consumers.

29. See *Vestnik statistiki*, 1956, no. 5, pp. 53–57, the issue reporting the conference.

30. *Vestnik statistiki*, 1960, no. 1, p. 11.

first meeting of the *sovnarkhoz* arrangement (the February 1957 resolution of the Party Central Committee) and was emphasized by Khrushchev in the May 1957 session of the Supreme Soviet, which passed the appropriate law. By 1958, TsSU had taken over the statistical reporting not only of the industrial ministries liquidated the previous year but also of agriculture, and a plan was formulated for setting up a countrywide network of "machine accounting stations."[31] Starovskii's own article during the political struggle over the *sovnarkhozy* and the elimination of the industrial ministries was doubtless well-timed.[32]

While Starovskii was rallying his field staff, he faced revolt in his own office in Moscow, in the person of one of his deputy heads, Ivan Malyshev. Writing in *Pravda* on the appearance of *Narodnoe khoziaistvo SSSR (Narkhoz 56),*[33] Malyshev strongly criticized its meager coverage. He pointed out the absence of data on public finance, banking, profits and their distribution, profitability by sector, and costs of transport of MTS or of state farms. Malyshev until his premature death was a protagonist of sophisticated investment criteria,[34] as well as of a more open policy on publication. He once authorized a Western student[35] to visit him in his office in TsSU. As soon as Starovskii heard that a Western citizen had crossed the TsSU threshhold, he put out an internal circular requiring that any future visits by such persons must be cleared personally with him.[36] Although Lev Volodarskii, another deputy head of TsSU, was, so far as can be seen, ranged with his chief on the advantages of centralization,[37] he had given hints of dissatisfaction with a "close" policy as early as 1955[38] and could hardly have been anything but ironic in concluding his preface to his 1958 book[39] by saying that

31. The history of these developments is recounted in more detail in ibid., pp. 10–12.

32. "Strengthen the unity of centralized state statistics," *Pravda*, 7 April 1957. When Starovskii had gained full local control, he was quick to check any attempt by the *sovnarkhozy* to parallel or supersede the regional branches of TsSu: see his condemnation of the Lipetsk *sovnarkhoz* in his article in *Kommunist*, 1957, no. 14.

33. *Pravda*, 7 June 1956.

34. See especially his articles in *Planovoe khoziaistvo*, 1957, no. 7, pp. 60–73, and in *Voprosy ekonomiki*, 1957, no. 3, pp. 93–105.

35. A French postgraduate student and Communist Party member, who was doing a year's research in Moscow and from whom the present writer heard the account.

36. The few British subjects who have penetrated the TsSU have all been on official mission: Alec Nove (when on the staff of the U.K. Embassy at Moscow in 1956), the head of the Statistics Division of the U.N. Economic Commission for Europe, Barrie Davies, and the director of the Central Statistical Office, Claus Moser. One of the contributors to this volume, Murray Feshbach, has also made a visit of similar official nature.

37. See Volodarskii's article in *Promyshlenno-ekonomicheskaia gazeta*, 6 July 1958, and the preface to his book *Statistika promyshlennosti i voprosy planirovaniia* (Moscow, 1958), a development of his earlier work, *Promyshlennaia statistika* (Moscow, 1954).

38. *Voprosy ekonomiki*, 1955, no. 8.

39. Volodarskii, *Statistika*, p. 5.

he was able to put in the tables because the abstract *Promyshlennost' SSSR* had just been published.

Controversy Over International Statistical Exchange

The meeting with heads of statistical offices of People's Democracies in October 1956, described later in an article by Starovskii as providing useful experience for the USSR on statistical methods,[40] was long in having its effect on statistical exchange, even of a confidential kind, among the socialist countries. It took many years of negotiation and another conference in March 1962 for Comecon to be authorized to establish a Statistical Commission (created in June 1962, although the first eleven such permanent commissions had been set up in May 1956).[41] Starovskii was named chairman, as he still is.

For its 1964 meeting the Comecon Statistical Commission decided to sit outside the USSR, and arrangements were made for its reception in Budapest. A few weeks before the session the chairman withdrew his acceptance of an external rendezvous and asked delegates to convene instead in Moscow.

TsSU's extreme reluctance to engage in foreign relations can also be exemplified by the long-delayed acceptance of a place on the United Nations Statistical Commission and on the Conference of European Statisticians (a joint convocation of the United Nations Statistical Office and the Economic Commission for Europe): in the absence of a delegate from TsSU, the Soviet government in the 1950's had to nominate first an academic economist (T. V. Riabushkin, head of the Statistical Section of the Institute of Economics of the Academy of Sciences USSR) and later a Gosplan official (A. I. Petrov of its Research Institute).[42]

After the creation of the Comecon Commission, a considerable volume of confidential material began to be circulated among member states. While not available to the general public or to nonmember governments, the development can be regarded as a step towards statistical publication.

Reference is made below to continuing disparities in the reporting of foreign-trade statistics between members of Comecon. The prospect of an improvement is, however, close, because the Comecon Statistical Commission agreed in December 1969 on a new uniform commodity nomenclature for trade reporting. The other important decision at the

40. *Kommunist*, 1957, no. 14.

41. See M. Kaser, *Comecon: Integration Problems of the Planned Economies*, 2d ed. (London, 1967), p. 259.

42. Both are well-known statisticians, Riabushkin as the author of several books on theory and methodology and Petrov as the editor of a best seller on statistical practice (his *Kurs ekonomicheskoi statistiki* ran to its fourth edition in 1967).

meeting—held, as usual, in Moscow—was to issue a Comecon Statistical Yearbook which appeared a year later as *Statisticheskii ezhegodnik stran-chlenov Soveta Ekonomicheskoi Vzaimopomoshchi 1970* (and contained standardized data for all eight members, some of it unpublished in national yearbooks). The communiqué added that the Commission "had agreed on the main features of a long-term program of cooperation in statistics and the exchange of statistical information."

Controversy with Soviet Economists

Academician Nemchinov's broadside against TsSU at the 1957 All-Union Conference of Statisticians was not his first clash, but seems to have been the first to be made public. An earlier dispute which happens to be known to the present writer occurred in 1956. In December of that year he visited Moscow on an ECE mission with another UN staff member and presented a draft set of national accounts for the Soviet economy with estimated figures for the year 1955. They gave the draft to Academician Nemchinov, among others. Returning to Moscow the following March, with the executive secretary of ECE, they again met Nemchinov, who expressed great interest in the articulated presentation (SNA practice) and observed, in relation to the attempt to compile actual figures, "It is not a reflection on the architect if the bricks are bad." Much later it was stated in a book by Mikhail Bor (of Gosplan) that Nemchinov had proposed the ECE draft (which he reproduced without the figures) as a basis for national accounting, but that it had been rejected by TsSU;[43] the published version of the accounts[44] in matrix form could not have been the basis for the submission. As Becker points out in Chapter 4 below, TsSU made public its own nonarticulated balance forms—which Bor criticizes—at the 1957 Conference.

Most of Nemchinov's speech at the Conference[45] was on TsSU's inefficiency in producing national accounts—its "manual accounting," its refusal to cooperate with Gosplan on input-output studies, its inadequate draft of a national balance, and "the departmental exclusiveness of TsSU which prevents it from dropping into the State Bank to utilize its documentation"[46]—but he went on to observe that he and

43. M. Bor, *Voprosy metodologii planovogo balansa narodnogo khoziaistva SSSR* (Moscow, 1960), pp. 51–57. Bor's work in national accounting and his discussions with the United Nations secretariat as a delegate to meetings in Geneva may be inferred from the references in Chapter 4 in this volume. Bor refers to this in his book in English, *Aims and Methods of Soviet Planning* (London, 1967).

44. "An Estimate of the National Accounts of the Soviet Union for 1955," *Economic Bulletin for Europe*, vol. 9, no. 1 (May 1957).

45. Also reproduced in V. S. Nemchinov, *Izbrannye proizvedeniia* (Moscow, 1968) 5:378–85.

46. This verbal spark may illuminate Powell's observations in Chapter 17 below on Gosbank and TsSU access to monetary statistics.

other members of the Scientific-Methodological Council were given blank forms at meetings because "Stanislav Gustavovich" (Strumilin), its chairman (who saw eye to eye with Starovskii) would not release "the riches now hidden in TsSu"; that TsSU's computation of the capital-output ratio seemed ridiculous, but no one could verify it; and that data on cost of production were collected but never analyzed: "The coffers of TsSU must be opened. Every scholar must be allowed to examine these questions. . . . The result of [TsSU's] incorrect position is as if outside TsSU there were no real economists, statisticians, or statistical studies." After observing that TsSU wastes more than half its information by not utilizing it and claiming that everything Starovskii cited in his speech to the Conference came from the *Bol'shaia sovetskaia entsiklopediia* ("not a phrase there is not known to all of us"), he concluded: "I am fighting for the victory of Soviet statistics, for its unity in all its ramifications in all departments, not just in TsSU alone; for the unity of statistical practice and scholarship, for a scientific unity I desire with heart and soul."

Starovskii was not deflected by this tirade and kept to his program of limited publication. By the beginning of 1958, having gained control over all departmental statistical reporting, TsSU was able to announce that all but one union republic had produced its abstract, together with 41 from lower-level territorial authorities,[47] and Starovskii declared established the 106 computer stations for his regional network.[48]

Nemchinov returned vehemently to the charge in 1959. He vainly called for the establishment of an Institute of Statistics and went on:

> State scientific researchers must be able to work on basic statistical data—from factories, state and collective farms, and municipal and trade enterprises. Without collecting—and processing the results of primary collections—without independent samples, . . . it is impossible to ensure authentic scholarly research. The general civilian ration [*obshchegrazhdanskii statisticheskii paek*] in the summary publications of TsSU precludes work on complex economic problems. Economic surveys and analyses of the situation and progress of the economy as a whole and of its individual branches must be systematically published on the basis of such collective research. The publication of economic yearbooks . . . should in our opinion be obligatory for our economic institutes.[49]

47. *Vestnik statistiki*, 1958, no. 1, pp. 77–78.

48. Ibid., p. 13. The subsequent contest over the control of the network of computer stations—which continues to the present—is alluded to below.

49. *Voprosy ekonomiki*, 1959, no. 4, p. 34.

This outspoken call was well-timed, for it must have influenced the government—as Murray Feshbach shows[50]—to include in the revised TsSU statute a new article requiring it to supply state statistics to research institutions and universities if the subject of research was in the institution's plan.

Controversy with Other Government Departments

After the enactment of the new statute, some improvement seems to have taken place in access to statistical material by accredited Soviet researchers, but TsSU did not cease to be a focus of discontent. Enough has perhaps been written to permit the more recent controversies, which are with other government agencies, to be merely listed—viz., over the questions to be asked in the January 1970 census of population; about the nonalignment of industrial classification by TsSU and Gosplan, notably for input-output tabulation; over the control of the computer network; on TsSU's obsession with production statistics (as described by Goldman in Chapter 14 below); its unrepresentative wastefulness in conducting household-budget studies, and scant concern with consumer services (also discussed in Chapter 14); on a late start to compute price statistics (recounted by Bornstein in Chapter 16 and by Goldman in Chapter 14); and on the volume index of foreign trade.[51]

Certainly there has been more drama in the history of TsSU than in that of any other statistical office in the world. Mikhail Ptukha's history of statistics in Russia had reached 1863 by the time he was seventy-five and he died before publishing more: one wishes that his painstaking pen could have unrestrainedly recorded the Soviet period.[52]

The Postwar Record of TsSU Publication

My aggregation of annual lists for 1956–65[53] is brought up to date in Table 3.2,[54] which includes those published by agencies other than TsSU.

50. In Chapter 8 below. But Feshbach takes Starovskii at face value in saying that the latter "scored" the previous system whereby until recently statistical data were not published.

51. M. Kaser, "A Volume Index of Soviet Foreign Trade," *Soviet Studies* 20 (April 1969): 523–26; briefly TsSU publishes in its abstracts a 1913-base index from which the Ministry of Foreign Trade dissociates itself.

52. M. V. Ptukha, *Ocherki po istorii statistiki v SSSR* (Moscow; vol. 1, 1955; vol. 2, 1959). There are in English brief surveys of the history of Soviet statistics by Vsevolod Holubnychy, *American Slavic and East European Review* 19, no. 1 (Feb. 1960): 28–41, and by a deputy head of TsSU, A. Ezhov, *Soviet Statistics* (Moscow, 1957).

53. "Soviet Statistical Abstracts 1956–65" in M. Kaser, ed., *Soviet Affairs 4*, St. Antony's Papers no. 19 (Oxford, 1966), pp. 134–55.

54. Compiled by Miss A. McClintock. It includes those in "Twelfth List of Soviet Statistical Abstracts," *Soviet Studies* 21, no. 3 (Jan. 1970): 401–4, viz., with entries in *Knizhnaia letopis'* to no. 28, 1969. This report on statistical publications is restricted to

Table 3.2 Soviet statistical abstracts, 1956–69

Source	*General*	*Sector*	*Total*
All-Union	27	68	95
Regional	469	75	544
Interrepublican	1	–	1
RSFSR	223	7	230
Ukraine	68	7	75
Belorussia	12	1	13
Uzbekistan	17	2	19
Kazakhstan	11	5	16
Georgia	20	1	21
Azerbaidzhan	19	2	21
Lithuania	16	10	26
Moldavia	11	3	14
Latvia	14	11	25
Kirgizia	15	2	17
Tadzhikistan	13	3	16
Armenia	11	6	17
Turkmenia	9	9	18
Estonia	9	6	15
International	11	–	11
Total	507	143	650

As the period covered is exactly thirteen years (if the maverick *Pechat' SSSR v 1954 godu* is not allowed to take the opening earlier than the appearance of *Narkhoz*) from mid-1956 to mid-1969, the cumulative total of 650 averages to 50 a year. The main fields to which All-Union sectoral abstracts have been devoted are agriculture, the budget, capital investment, demography, education, elections, publishing, health, industry, labor, trade, transport and communications, and women and children. The series on foreign trade is not published by TsSU and is discussed separately below.

Regional coverage was completed for the RSFSR (viz., at least one abstract for each oblast or krai but not necessarily for further subdivisions)[55] in 1967 by the issue of one for Kaliningrad—the former German East Prussia—the economic development of which has been particularly obscure (though it was chosen for pilot regional input-output observation). Only four oblasts of the RSFSR have failed to issue at least two abstracts, viz., Amur, Belgorod, Briansk, and Kostroma. In

abstracts, but the publishing program of TsSU of works on statistics has always been substantial (by Gosstatizdat TsSU before the 1965 economic reform and by Statistika since). The bulk of scholarly work on statistical methods, etc., now comes from the TsSU Research Institute, created in 1963, the director of which, A. Ia. Boiarskii, has reviewed his institute's publications in the organ of the GDR TsSU, *Statistische Praxis*, 1969, no. 10, pp. 579–81.

55. The Gorno-Altai, Karachaevo-Cherkess, Khakass, and Jewish autonomous oblasts within various krai have never issued an abstract.

the Ukraine two oblasts have never had an abstract published, viz., Sumi and Zaporozh'e (but one for Chernigov arrived only in 1968), and none has appeared for any oblast of Belorussia nor for the sole one in Turkmenia. In Uzbekistan seven oblasts and in Kazakhstan eleven have never put in a separate statistical appearance, although the divisions of Azerbaidzhan, Georgia, and Kirgizia have been covered. Among cities, separate abstracts have appeared for each union-republican capital except Minsk, Alma-Ata, Vilnius,[56] Frunze, Ashkhabad, and Tallin.

With the exception of abstracts on foreign trade, finance, health, and publishing (discussed below), all those published since the war have borne the imprint of TsSU or its offices (frequently using a local publishing house for the actual publication), but during the sixties other books published by other publishers have contained statistical annexes or compact blocks of tabular material. Among these have been books or pamphlets on individual oblasts or krai (e.g., Lipetsk oblast and Komi ASSR) or on sectors within union republics (e.g., public health in the RSFSR, in Belorussia, and in Moldavia, or separately on industry and on agriculture in Voronezh oblast). A more popular series subtitled *Tsifry i fakty* had appeared for regions (e.g., Belorussia), cities (e.g., Khar'kov) or sectors (e.g., fuel and power, publishing), but the fullest information is to be found in compendia on the natural resources, history, economy, and culture, not only of certain oblasts (e.g., Belgorod and Gorky) but even of rural and urban raions (e.g., Tuapse and the Moskovskii raion of Kiev, respectively). The 22-volume regional geographies now being published by Mysl', Moscow, under the title *Sovetskii Soiuz* and the editorship of S. V. Kalesnik, president of the Geographical Society of the USSR, also contain statistical appendices.

One of the *Tsifry i fakty* group concerning a lower territorial unit, *40 let Sovetskoi vlasti v Churapchinskom raione: tsifry i fakty*, published in the Yakut language in Churapcha village, Yakut ASSR, in 1958, was curious in being published by the Churapchinskii *raion* committee of the Communist Party.[57] Six hundred copies were printed. This *tirazh* was not smaller than for some abstracts proper, because certain sectoral abstracts of a union-republic are printed in as few as 150–300 copies;[58] others are marked "not for sale" (*besplatno*) and must similarly be circulated only to a few interested persons and offices in the area.

It would require a major effort of research to determine whether they contain material unavailable in a TsSU publication; the only major

56. Though the prewar Lithuanian capital, Kaunas, had an abstract in 1968.

57. *Knizhnaia letopis'*, 1958, no. 41.

58. As indicated in the list in *Soviet Studies* 21, no. 3 (Jan. 1970): 402, this was pointed out to the writer by Mr. A. P. Fletcher; it was also noted that some of those abstracts with limited circulation have been received by the Library of Congress.

element which the present writer has observed is the printing of meteorological data in the *Sovetskii Soiuz* series: their absence from the standard abstract is surprising, since they normally appear in yearbooks in other East European states.

Vestnik statistiki began including "statisticheskie materialy" as an appendix in its issue no. 6 of 1956, disingenuously beginning "At the request of many readers of the periodical *Vestnik statistiki* some results are published below on the 1939 population census." Besides these totals the appendix gave figures on female participation in the work force and in education, but economic data did not appear until issue no. 1 of 1957, which published the results of household-budget studies and various groupings of retail shops and catering establishments. The journal of the State Planning Commission began to include rare appendices, "statisticheskie materialy," in its issue no. 12 of 1961, but that and the ensuing appendix (in no. 3 of 1962) were tabulations of the 1970 and 1980 plans, thus effectively respecting the TsSU monopoly of current data, though comparative figures for 1958 and 1960 were incorporated in the tables. The real break had come with the publication in the monthly journal of the Ministry of Finance, *Finansy SSSR*, of an annex "finansovaia statistika" in its issues no. 9, 10, and 11 of 1958, giving detailed state-budget data for the Union and the Republics; releases of the same kind were continued on a sporadic basis. The facility of the Ministry of Finance to issue its own tabulations is significant. As Powell points out in Chapter 17 below, the State Bank continued to produce its monthly reports until May 1932: it was in fact the last bastion to fall as TsSU achieved its publication monopoly.

There remain finally to be described some publications of a specialized nature—censuses, historical series, the decennial commemorative abstracts, and the independently published foreign-trade statistics.

Censuses

The 1920 partial population census was published rather belatedly as *Itogi perepisi naseleniia 1920 g.* (1928); the all-union census of cities of 1923 did not appear separately, but its results were reported in various issues of TsSU occasional papers;[59] and the 1926 census, probably the fullest ever published for the country,[60] appeared in 56 volumes of *Vsesoiuznaia perepis' naseleniia 1926 g.* between 1928 and 1933. The results of the 1937 census were suppressed—the purge of "wreckers

59. *Trudy*, vols. 17, 22, and 27.

60. The 1897 census appeared in 89 volumes (St. Petersburg, 1899–1905), but the content of the 1926 census was in many ways broader.

and enemies of the people" extending to the head of the TsUNKhU[61] – and only preliminary results of a replacement census held in 1939 were published.[62] Modest extracts from the 1959 census were published in a summary volume, *Itogi vsesoiuznoi perepisi naseleniia 1959* (1962), and in 15 subsequent volumes (one for each union republic). Preliminary results of the 1970 census appeared in *Izvestia* 19 April 1970. Sectoral censuses were published before World War II, but have not since appeared as separate volumes, selected material emerging in the general yearbooks. Specifically these were the general farming census, viz., *Itogi vserossiiskoi sel'skokhoziaistvennoi perepisi 1920 goda* (1920); two censuses of land use, i.e., *Sel'skokhoziaistvennoi i pozemel'noi perepisi 1917* (2 vols., 1921 and 1922) and *Itogi razrabotki sel'skokhoziaistvennoi perepisi po tipam i gruppam khoziaistva*;[63] a census of industrial workers, *Materialy ucheta professional'nogo sostava personala fabrichno-zavodskoi promyshlennosti* (1925); a series on manufacturing industry, all entitled *Fabrichno-zavodskaia promyshlennost' SSSR* and appearing for 1922 in 1924, for 1923 in 1925, for 1924 in 1926, and for 1926/27 in 1929; one of coal-mining operations, *Itogi perepisi zaboev i oborudovaniia ugol'noi promyshlennosti* (1936); two on handicrafts, *Melkaia i kul'turno-remeslennaia promyshlennost' Soiuza SSR v 1925 godu* (1926) and *Melkaia promyshlennost' SSSR po dannym vsesoiuznoi perepisi 1929 goda* (1933).

Historical Series

There are no collated long-run abstracts such as the *Historical Statistics of the United States* or B. R. Mitchell and P. Deane, *Abstracts of British Historical Statistics,* save for a fascinating compilation published in 1940, not by TsSU but by the Moscow publisher Moskovskii rabochii, namely, *Narodnoe khoziaistvo SSSR v tsifrakh (1860–1938 gg.).* The compiler was I. Golubnichii and the editor P. Petrov. Statistics are grouped by economic period and not in continuous-run tables, but many series reappear, though not systematically.[64] The *tirazh* imprint shows 30,000 copies to have been printed and that it was signed for the press

61. See Grossman.

62. *Izvestia,* 2 June 1939; *Bol'shevik,* 1939, no. 15–16, p. 113; *Pravda* 29 April 1940; *Bol'shevik,* 1940, no. 10, pp. 17, 12, 22. The preliminary results were meagerly supplemented long afterward (*Vestnik statistiki,* 1956, no. 6). A few more data were released (for comparative purposes) with publication of the 1959 census results.

63. Published in *Trudy,* vols. 2, 5, and 14.

64. The library of the U.S. Bureau of the Census has one copy. No copy exists in any United Kingdom library; the present writer expresses his appreciation to the National Central Library, London, and the Lenin Library, Moscow, for an international loan at the request of the Librarian of St. Antony's College, Oxford, to whom thanks are also due.

on 9 January 1940; it was unique in its period coverage and was also the last abstract to appear before the war.

Normally the annual abstracts cite only 1913 data (or a slightly earlier or later year)[65] and furnish nothing for further retrospective. Just after the Revolution a few compilations made special comparisons with the previous period, viz., *Produktsiia fabrichno-zavodskoi promyshlennosti za 1912, 1920 i 1921 gody* (1922); *Sbornik statisticheskikh svedenii po gornoi i gornozavodskoi promyshlennosti SSSR za 1911–1924/25 gg.* (1928), but particular mention must be made of *Sel'skoe khoziaistvo Rossii v XX veke. Sbornik statistiko-ekonomicheskikh svedenii za 1901–1922 gody* (1922) compiled by Professor N. P. Oganovskii under the general editorship of N. D. Kondratiev, who contributed a foreword.[66] It deserves attention because of the meticulous linking of pre- with post-revolutionary series and because agriculture is interpreted in the wide sense not only of production of the various crops and livestock (and fisheries) but of foreign trade in that produce. It covers, however, just the RSFSR, Kondratiev pointing out that in 1922, when the data were compiled, it had proved impossible to secure figures for Turkmenistan, the Transcaucasian republics and the Far Eastern Republic.

Decennial Commemorative Abstracts

Every ten years the anniversary of the October Revolution has been marked by a volume aimed at a broader reading public. Ideological epigraphs get attached to tables, which in turn provide generally less detail than the standard yearbook. There was no issue for 1947 (the mid-point of the statistical blackout), and in 1957 and 1967 the anniversary volume displaced the standard annual abstract. For the record, their titles are listed below:

Itogi desiatiletiia sovetskoi vlasti v tsifrakh 1917–1927 (Moscow, 1927);
Dvadtsat' let sovetskoi vlasti (Moscow, 1937);
Dostizheniia sovetskoi vlasti za 40 let v tsifrakh (Moscow, 1957);
Strana Sovetov za 50 let (Moscow, 1967).

Foreign-Trade Statistics

Special mention must be made in conclusion of foreign-trade statistics for four reasons. First, they are the sole annual abstracts which are put out by an agency other than TsSU: occasional books are published

65. 1897, 1910, 1914, and 1916, as appropriate, for the last prerevolutionary record.
66. Republished as *Russian Reprint Series LII* (The Hague: Europe Printing, 1968), eds. A. V. Soloviev and A. Kimball.

by the responsible ministry but never systematically.[67] Secondly, they are the only sectoral handbooks for which a consistent historical series for every year is available,[68] although the breakdown for the war years is extremely slim.[69] Thirdly, the postwar series has been published without a break, whereas the general TsSU abstract has twice failed to appear and all other sectoral or regional yearbooks have been sporadic.[70] Fourthly, no chapter in the present book examines the information published in this sphere, and a brief reference to gaps in content seemed desirable.

The last prewar volume was published in 1939, *Vneshniaia torgovlia SSSR za dvadtsat' let, 1918–37 gg.*, and the first postwar volume in 1958, *Vneshniaia torgovlia SSSR za 1956 god.* The latter series has regularly appeared,[71] with a slight variation in title to *Soiuza SSR* in place of *SSSR* in 1960 (issue for 1959). Each annual volume provides data for the current and the preceding year, and cumulative volumes have been published for the interwar period (*Vneshniaia torgovlia SSSR za 1918–40*), making available series for the last three months of 1938 and for 1939 and 1940 not published before the war; for 1955–59; and for 1959–63 (with appropriate titles).

The basic information given in the postwar foreign-trade abstracts is standardized into summaries, commodity composition, direction by country, and commodities by country. The commodity breakdown by country does not sum to the total commodity import or export, and the

67. Those on publishing have had the imprint of the Ministry of Culture or of the State Committee of the Council of Ministers for the Press: *Gosudarstvenny biudzhet SSSR i biudzhety soiuznykh respublik* (Moscow, 1962 and 1966) and *Mestnye biudzhety SSSR* (Moscow, 1970) have been issued by the Ministry of Finance; *Ugol'naia promyshlennost' SSSR* (Moscow, 1957) by the publishing house of the Ministry of the Coal Industry (Ugletekhizdat); *Lesnaia promyshlennost' SSSR* (Moscow-Leningrad, 1957) by the Ministry of the Timber Industry; and *Zdravookhranenie SSSR* (Moscow, 1956, 1957, and 1960) by the Ministry of Health.

68. It is the object of other chapters in this book to examine the content of the abstracts, but it may generally be said that data on the war years are suppressed and that information on the two preceding and the ten following years are thinner than for others. There is a certain nuance in the official summary of the abstract in *Vneshniaia torgovlia SSSR za 1968 god* (1969), p. 2: "The abstract is the fullest source of annual statistical information on Soviet foreign trade published in the USSR."

69. Trade statistics for 1941–54 were published in *Vneshniaia torgovlia SSSR 1918–1966* (1967).

70. *Pechat' v SSSR* broke its record in one year (1957) and *Narodnoe khoziaistvo Ukrainskoi SSSR* in 1959, 1961, and 1964; these are the runners-up in the consistency race.

71. In hardback. A paperback version appears as a supplement to *Vneshniaia torgovlia*, the monthly organ of the Ministry of Foreign Trade, and substantial extracts are published in translation in the English-language version of that magazine, *Foreign Trade, USSR*; in 1969 the tables were spread over issues 6 to 11.

value aggregate of all commodities does not sum to total import or export.[72] Similarly the country-specified trade does not add up to total import or export. Since 1962, total trade has been published by quarter, and since 1959, by means of transport at the Soviet frontier.

Elaborative tables published comprise, firstly, percentages of trade by country group: socialist, including Comecon; capitalist, including "industrialized"; and "developing." The "developing" group is a catch-all for trade not specified by country and exceeds the country-detailed aggregate.[73] There has, secondly, always been a table on imports and exports by broad commodity group. Initially this followed the prewar practice of separating only "industrial goods" (among them, goods "based on agricultural raw materials") and "agricultural goods", but in 1962 a table which was rather closer to the agreed Comecon standard classification[74] was added. The issue for 1964 appeared with the classification "further revised,"[75] but still not identical with the Comecon practice (adopted by the majority of members, to which East Germany remains the main exception), and no alternative presentation. The TsSU general yearbook also carries this revised table with the same figures,[76] although when it first appeared it adopted yet a third classification form which differed in many ways from that in the first abstracts issued by the Ministry of Foreign Trade; not only did titles of apparently similar groups

72. A careful comparison of Soviet exports to India and Indian imports from the USSR for 1960–65 by the late Asha L. Datar, *India's Economic Relations with the USSR and Eastern Europe, 1953/54 to 1969/70* (Cambridge: Cambridge Univ. Press, forthcoming) strongly suggests that the Soviet figures include combatant defense goods which are excluded from the Indian. She accounts for some of the differential by the Soviet incorporation under item 16 ("exports of complete plant") of technical services which, not being goods, are not counted by India, and by making the same estimate as the United Nations (10 percent) for adjusting Soviet f.o.b. exports to the c.i.f. basis of the Indian. Because Indian export and Soviet import figures are compatible (after allowance for respective timing), and because there is no significant gap in a comparison of data published by all of India's other east European partners (except Hungary, on which valuation problems apparently arise) and India's recorded imports, she concludes that defense goods constitute the differential, which, moreover, rises sharply from 1963, when India increased defense procurements from the USSR (as a consequence of the Chinese invasion of 1962). She finds further evidence in a comparison of the Indian statistics with another Indian series which includes defense goods purchased but not those supplied gratis.

73. This point and the examination of country omissions (below) are due to Professor R. A. Yellon, of the University of Manitoba, who points out that the criteria used for differentiating "developed" from "developing" are geographic rather than economic: thus, all Europe (including Greece, Portugal, and Spain) is counted "developed," while all Asian, African, and Latin American countries (including Argentina and Mexico) are "developing."

74. Adopted in March 1959; see M. Kaser, *Comecon*, pp. 52–53.

75. The Soviet nomenclature of 1954 was revised in 1962.

76. There is a trivial difference in the "machinery and equipment" export percentage for 1967 in the respective abstracts for 1967.

differ,[77] but the total in the TsSU series included so-called "reexports,"[78] which the Ministry of Foreign Trade series did not.[79]

The third elaborative table, regularly given in the Ministry of Foreign Trade abstracts since 1959, is the quantum index of trade, which has already been noted as differing from the TsSU figures, although neither the price deflators nor a terms-of-trade index are made public. The final such table—which was initially published (for 1960–64) in 1966—sets out domestic production against imports and exports in physical units. The output data are explicitly taken from TsSU publications, not from TsSU directly. A minor reticence covers export of equipment under the auspices of GKES (the State Committee for Economic Relations), viz., under the Soviet aid program to developing countries; these are excluded from the production-and-trade table (as a result, the ratio of exports to production is understated) and are grouped in "deliveries of complete enterprises" in the commodity tables without specification by type.

The final publication problem in relation to foreign trade concerns the disappearance of certain states from the country tables.[80] In *Vneshniaia torgovlia Soiuza SSR za 1959–63 gg.*, table 2, which covers the years 1938 and 1955–63, does not list Israel, Ivory Coast, Portugal, or the Union of South Africa, and table 15, which covers 1958–63, makes a similar omission—understandable in the case only of Israel, with which Soviet trade ceased in 1956. *Vneshniaia torgovlia SSSR za 1955–59 gg.*, however, had given figures for Ivory Coast in 1955–57 and 1959 (indicating that there was no trade in 1958), for Portugal in 1955–59, and for the Union of South Africa in 1955–59; Israel (with which trade relations existed in 1955 and 1956) is omitted. Neither the annual trade abstract for 1962 nor that for 1963 listed any of these four states, presumably because there were no exchanges in those years.[81] That for 1961 gave figures for Ivory Coast in 1960, with a blank (—) entry for 1961,[82] and entries for Portugal in both years (that it had fallen below .05 million

77. Thus for 1955 the first TsSU abstract (1956) showed the percentage of machinery in total export as 22.1, but the first Ministry of Foreign Trade percentage (abstract of 1958) was 15.7, the latter excluding equipment for "nonproductive use."

78. The title did not say so at the time, but this was specified in later issues.

79. The TsSU usage is not in accord with Western practice (reexports from the country itself, which the Ministry of Foreign Trade counts) but concerns offshore sales by Soviet enterprises abroad (chiefly SAG in East Germany and the "mixed companies" in ex-enemy states). Both TsSU and the Ministry of Foreign Trade adopt a different practice for imports, specifying country of origin, not country of shipment (for details, see Kaser, *Comecon*, pp. 160–61).

80. As indicated in n. 73 above, I am indebted for this paragraph to Professor Yellon.

81. Although the 1962 abstract should properly have listed the 1961 trade (see the next note), since each covers two years.

82. This is the usual handling of a country with which trade ceased during the two-year coverage.

rubles and had conventionally to be entered as 0); the Union of South Africa was not listed, though there had been trade in 1960.[83] All the previous trade yearbooks (for 1956 to 1960) properly listed all trade with those countries when it occurred, save that Israel was dropped in the abstract for 1957, though properly its trade during 1956 should have required entry.

Epilogue

To end a review the theme of which had necessarily to be the concealment by TsSU of the majority of statistics it collects, one might, more lightheartedly, quote one solitary plea by a distinguished Soviet author for less to be published.

At the Twenty-Second Party Congress (1961) the then minister of culture, Mrs. Furtseva, had given a glowing statistical account of the growth of Soviet culture. Mikhail Sholokhov commented:

> It is good of you to say that out of 1,114 Soviet plays . . . 780 deal with contemporary themes. You said it was more than 70 percent. But then I would like to ask, what percentage of this 70 percent will stay on the stage? . . . Figures and percentages are sticky things, Comrade Furtseva, and people come a cropper over them. Better for those figures to reside somewhere in TsSU: they'll be cosier there, but they don't fit in art.[84]

83. Another case of abnormal procedure when there was trade in the first, but not in the second, year concerned.

84. Cited by Churchward, p. 217.

II

National Income Statistics

4

Abraham S. Becker

National Income Accounting in the USSR

1. Concepts and Procedures[1]

For more than thirty years there has not been published a manual of the Soviet national accounts. In 1957 TsSU presented for public discussion a set of national-balance forms. These were introduced in a brief paper by the late V. Sobol', then head of TsSU's national-balance division, but were accompanied by no detailed explanation. Sobol' elaborated slightly on his 1957 paper in sections of a 1960 book[2] and reprinted there the set of balance forms first presented in the proceedings of the 1957 conference. Much information has been published on the methodology of the major input-output studies performed in the USSR, particularly for 1959 and 1966; the chief and most authoritative figure from the viewpoint of national accounting is M. Eidel'man, in charge of TsSU's effort in this field.[3] A recent Gosplan manual on annual plan construction contains

1. This chapter is concerned with the concepts, procedures, and numerical estimates of national income and product, adopted and performed by the Central Statistical Administration of the Soviet Union (TsSU). Section 1 deals with current accounting practices, Section 2 deals with the published data, and Section 3 summarizes some problem areas. Any views expressed in this chapter are those of the author. They should not be interpreted as reflecting the views of the RAND Corporation or the official opinion or policy of any of its governmental or private research sponsors. The author wishes to express his gratitude to Robert Campbell for an instructive critique of the earlier version of this chapter. Thanks are also due to Morris Bornstein and Vladimir Treml for a number of helpful comments and suggestions, and to Peter Wiles for discovery of an error in the chapter that helped clarify the Soviet treatment of foreign trade in national accounting.

2. *Vsesoiuznoe soveshchanie statistikov*, 4–8 iiuniia 1957 g. (Moscow, 1958), pp. 177–219. For the later work see Sobol', *Ocherki po voprosam balansa narodnogo khoziaistva* (Moscow, 1960), pts. 5–7.

3. Eidel'man's major work is *Mezhotraslevoi balans obshchestvennogo produkta* (Moscow, 1966). Methodological references are also to be found in several earlier papers: *Vestnik statistiki*, 1960, no. 1, pp. 55–69; ibid., 1961, no. 7, pp. 9–31, and *Voprosy ekonomiki*, 1961, no. 10, pp. 61–74. On the 1966 input-output table see *Vestnik statistiki*, 1967, no. 11, pp. 22–35, and ibid., 1969, no. 4, pp. 19–30; the latter was coauthored by L. Volodarskii. In the same field another authoritative work is A. N. Efimov and L. Ia. Berri, eds., *Metody mezhotraslevykh proportsii* (Moscow, 1965). The early literature is more fully surveyed in Vladimir Treml, *The 1959 Soviet Intersectoral Flow Table* (Research Analysis Corporation: McLean, Va., Nov. 1964), vol. 1. See also his, "A Note on Soviet Input-Output Tables," *Soviet Studies* 31, no. 1 (July 1969): 21–34.

material on the national balances.[1] Finally, there are the fragmentary notes appended to the statistical yearbooks.

This is the sum and substance of more or less official references. For the rest, the researcher must make do with secondary sources[5] in which he will frequently struggle to distinguish between what is and what the particular writer believes ought to be. It is no surprise that gaps of understanding remain.

Except tangentially, I do not deal with the Soviet theory of national income. The literature on this subject is substantial, particularly as it relates to the Marxian theory of value,[6] but for the most part I am concerned with understanding how the Soviet national accounts are constructed, on which evidence is adduced from an examination of the literature and analysis of the official data. Nor will this section present an exhaustive description of Soviet procedures. These will be summarized, and only the major and/or less familiar problems will be highlighted. I should also add that the discussion is limited to national accounts; there is a growing literature on republican and regional accounts[7] which cannot be dealt with here.

4. Gosplan SSSR, *Metodicheskie ukazaniia k sostavleniiu gosudarstvennogo plana razvitiia narodnogo khoziaistva SSSR* (Moscow, 1969).

5. Apart from those cited above, the more useful references for the discussion of Section I are these: D. Allakhverdian, *Natsional'nyi dokhod SSSR* (Moscow, 1958); Iu. Belik, *Gosudarstvennyi plan i balans narodnogo khoziaistva SSSR* (Moscow, 1960); A. Boiarskii et al., *Statisticheskii slovar'* (Moscow, 1965); M. Bor, *Balans narodnogo khoziaistva* (Moscow, 1956); idem, *Planovyi balans narodnogo khoziaistva SSSR* (Moscow, 1959); E. Freimundt, *Sovokupnyi obshchestvennyi produkt i ego isklislenie v SSSR* (Moscow, 1958); idem, "K voprosu ob opredelenii poniatiia 'sovokupnyi obshchestvennyi produkt' i sistemy ego pokazatelei," in AN SSSR and Moskovskii ekonomiko-statisticheskii institut, *Voprosy ekonomicheskoi statistiki* (Moscow, 1958), pp. 3–18; also in the same volume, T. Riabushkin, "Metodologicheskie voprosy balansa narodnogo khoziaistva," pp. 19–66; A. Gozulov, *Ekonomicheskaia statistika*, 2d ed. (Moscow, 1965); M. Kolganov, *Natsional'nyi dokhod* (Moscow, 1959); L. Marin, *Kak ischisliaetsia natsional'nyi dokhod SSSR* (Moscow, 1963); I. Morozova, *Balans narodnogo khoziaistva i metody ego postroeniia* (Moscow, 1961); P. Moskvin, *Voprosy statistiki natsional'nogo dokhoda SSSR* (Moscow, 1955); A. Petrov, ed., *Kurs ekonomicheskoi statistiki*, 4th ed. (Moscow, 1967); B. Plyshevskii, *Raspredelenie natsional'nogo dokhoda v SSSR* (Moscow, 1960); T. Riabushkin, *Problemy ekonomicheskoi statistiki* (Moscow, 1959).

6. See the works of Bor, Eidel'man, Kolganov, Morozova, Plyshevskii, Riabushkin, and Sobol', cited above. Also Bor, *Voprosy metodologii planovogo balansa narodnogo khoziaistva SSSR* (Moscow, 1960); V. Belkin, *Tseny edinogo urovnia i ekonomicheskie izmereniia na ikh osnove* (Moscow, 1963); Ia. Kronrod, *Obshchestvennyi produkt i ego struktura pri sotsializme* (Moscow, 1958); Sh. Turetskii, *Planirovanie i problemy balansa narodnogo khoziaistva* (Moscow, 1961). V. Nemchinov dealt frequently with Marxian theory in the context of mathematical economic models. See, for example, his *Ekonomiko-matematicheskie metody i modeli*, 2d ed. (Moscow, 1965).

7. E.g.: V. Dadaian and V. Kossov, *Balans ekonomicheskogo raiona kak sredstvo planovykh raschetov* (Moscow, 1962); L. Mints, V. Kossov, and E. Baranov, *Mezhotraslevoi balans ekonomicheskogo raiona* (Moscow, 1967); Moskovskii ekonomiko-statisticheskii institut, *Balans obshchestvennogo produkta soiuznoi respubliki* (Moscow, 1962); L. Tarasov, "O sostavlenii balansa obshchestvennogo produkta v soiuznoi respublike," in N. Oznobin, ed., *Ocherki po sovremennoi sovetskoi i zarubezhnoi ekonomike*, 3 (Moscow, 1962): 3–19. See also *Ekonomika i matematicheskie metody*, 1970, no. 1, pp. 145–49.

Production Boundaries and Divisions

By far the most important way in which communist national accounting systems differ from their Western counterparts is in the restriction of the concept of production to material product. The line between material and nonmaterial, between productive and nonproductive spheres, is a fine one, and the boundary is violated by various expedients.[8] Recent discussion also suggests that the distinction will be further blurred in the future.[9]

Production by Marxist light is the product of social labor in material form. The labor is "social" if the result is reproducible (as works of art are supposed not to be) and if the activity is performed regularly and gainfully (as recreational fishing is not). The product is "material" if it involves a physical good, but the term also embraces energy produced from nonhuman resources. Moreover, material output means not only the transformation of the physical form or shape of a physical good, or the creation of new material values, but also activities viewed as increasing the capability of material goods to satisfy needs or as increasing the value of the new material values created elsewhere. Here the concept in fact embraces material services, which, as we shall see, are present in a variety of forms.

By type of activity, the material-production sphere is customarily divided into ten composite branches: industry, agriculture, forestry, construction, freight transportation, communication serving production, trade, material supply (literally, material-technical supply), agricultural procurement, public catering, and a miscellaneous branch. The last covers such minor pursuits as household procurement of timber, firewood, peat; picking fruits, berries, and mushrooms by households; household production of meat and dairy products;[10] nonrecreational consumption hunting and fishing; publishing; film production; scrap collection.

Industry comprises two basic groups—extractive and processing or manufacturing industry. Extractive industry includes procurement of timber and commercial fishing and might perhaps better be called primary industry. Manufacturing industry covers not only the production of new articles but also the repair of old ones. Industry is also subdivided by branches, whose number and scope have changed over time.[11]

Agriculture covers the production of crops, the breeding and rearing of livestock (including fish and bees), the output of livestock raw products

8. It should go without saying that expediency is not unknown in Western national accounting.

9. See Section 3 below.

10. Baking bread and other food-processing activities for the household's own account are not considered material production.

11. For details on these changes, see Eidel'man, *Mezhotraslevoi balans*, pp. 16–20. On the criteria for distinguishing between group A and group B industry, see ibid., p. 15.

not involving livestock slaughter (milk, eggs, wool, honey). Livestock products derived from slaughtering the animal, as well as the processing of any agricultural product (milling flour, making cream, cheese, butter), are part of industrial output. Cutting timber is an activity of industry, except that household procurement of timber is classified with miscellaneous material production. The growth and maintenance of timber is a separate branch of output, forestry (*lesnoe khoziaistvo*).

Construction embraces construction per se—of buildings and structures (whether productive or nonproductive in character, including private housing built for own account); geological prospecting, project design, drilling, and related activities connected with the construction of specific objects; land melioration; installation of equipment; and capital repair of buildings and structures—that is, partial physical renewal (*vozobnovlenie*) or replacement of fixed capital.

Freight transportation refers only to the transport of freight by common carriers, defined as independent transport enterprises operating on contract. Intraplant or intraenterprise transport is considered a function of the branch of activity in which the enterprise itself is classed. In addition to rail, sea, river, road, and air systems, freight transport includes pipelines, as well as loading and unloading operations.[12] Communication serving production is that part of the output of the postal, telegraph, telephone, and broadcasting systems consumed within the material-product sphere.

Trade, material supply, and agricultural procurement are distribution activities differing principally in the commodities with which they deal. Material supply involves the nonmarket disposition of "means of production"; trade, the sale of "means of consumption." Agricultural procurement encompasses both categories, as does foreign trade, presumably. Public catering occupies a somewhat special place insofar as its processing of raw materials accords it a status akin to industry.

Finally, we may simply list the elements of the nonproductive sphere—general administration and the judicial system, defense, scientific organizations, finance and credit, education, health, and culture, housing, passenger transport, communication serving households, personal services (baths, cemeteries, barbershops, etc.).

The neatness of the distinctions between material good and service, and between productive and nonproductive service, is quickly blurred in practice. Factory watchmen are service employees, but their wages are part of the earnings of productive labor.[13] Indeed a significant portion of

12. As a branch of the economy, freight transportation encompasses highway maintenance, but the latter is probably not included in output. Petrov, pp. 23, 242–43; Sobol', p. 150; and Moskvin, pp. 63–64.

13. For the accounting necessity of this kind of departure from principled classification, see below, the text associated with n. 53.

personal services is reckoned productive—those services rendered by industrial or artisan enterprises in the preparation, cleaning, and repair of household goods: not only to-order sewing and repair of footwear and clothing, or production-to-order and repair of furniture and electrical goods, but also cleaning, dyeing, and laundry. On the other hand, baths and barbershops are excluded;[14] hence workers engaged in the "production" of steam in public baths are classed with service employees.[15]

There are other, similar anomalies in retail trade. Pure buying and selling activities, Soviet writers acknowledge, would be classed in the nonproductive sphere, were it not for statistical convenience. Hotels do not create material product but their attached restaurants do. Stationery sales in retail shops are activities of productive labor; when sold by postal stations, the same envelopes reflect no income generation. Trade output includes repair of private cars at special technical service stations, but not technical inspection or washing at these stations.[16]

There has been a long-standing debate on the legitimacy of these distinctions and, as is suggested in Section 3 below, changes in Soviet accounting practices seem likely to be forthcoming.

Income and Product Concepts

Soviet national accounting has traditionally operated with two basic aggregates—*sovokupnyi* (sometimes *valovoi*) *obshchestvennyi produkt*, "aggregate (gross) social product," here translated to accord with standard practice as "gross social product" (GSP), and *natsional'nyi* (sometimes *narodnyi*) *dokhod*, "national income." To avoid confusion with the Western concept of the same name, "national income" is usually rendered as "net material product" (NMP).[17] Recently, another aggregate has come in for much discussion, *konechnyi* (*obshchestvennyi*) *produkt*—literally "final (social) product," here translated as "final material product" (FMP). The focus of this chapter is on the first two aggregates, the basis of most official series.

GSP is defined as the total of material values produced in the economy during the accounting period. By "commodity" (*material'no-veshchestvennaia*) form, GSP is composed of means of production and means of consumption, these constituting the Marxian divisions I and II of produc-

14. For a detailed list of productive and nonproductive personal services, see V. Gur'ev, *Vestnik statistiki*, 1968, no. 1, p. 27.

15. A. Vainshtein, *Narodnyi dokhod Rossii i SSSR* (Moscow, 1969), p. 114. See also Alec Nove, "Some Notes on Soviet National Income Statistics," *Soviet Studies* 6, no. 3 (Jan. 1955): 249.

16. V. Nikitin, *Sovetskaia torgovlia*, 1969, no. 6, p. 15.

17. For symmetry, GSP should really be called something like gross material product. On the other hand, the Soviet terms are not very precise either. "National income" covers both income and output aggregates.

tion. In terms of "value" (*stoimost'*), GSP is the sum of transferred value—means of production consumed in the process of production (material inputs plus depreciation)—and newly created value ("national income"). The first component, identified with Marx's *c* (constant capital), is called the fund of replacement of material production expenditures. "National income" is the sum of labor earnings (*v*) and surplus value (*m*). Thus NMP, as newly created value, is the difference between GSP and transferred value or the material-production replacement fund.[18]

In "commodity" form, NMP consists of means of consumption and net investment in means of production, differing thus from GSP in the deduction of intermediate distribution of output including depreciation.[19] Uses of output include commodity losses that are not customarily charged to cost—accidental damage, abandoned construction, and the like. Deduction of these losses along with the foreign-trade balance distinguishes "utilized" from "produced" NMP. Lastly, FMP has been defined as that "part of aggregate product and of output in each branch which leaves the boundaries of current productive consumption and is used for nonproductive consumption, accumulation, replacement of fixed capital wear and tear (including capital repair), export, and other elements of final demand."[20]

The two central output aggregates have their counterpart income totals, identically equal in size. The production process generates primary incomes in the branches of material production.[21] Redistribution of these incomes through trade and the financial system eventually yields the final incomes that support the final distribution of output. Of course, FMP has no meaningful cost or income structure.

As an accounting concept, final product has been largely connected with the developing field of input-output studies in the USSR and owes its existence in part to a set of empirical difficulties encountered by

18. Confusingly, net product as an aggregate of incomes, whether in a particular branch or for the whole economy, can be referred to as "gross income," as Marx employed the term. Deduction of payments to productive labor yields "net income." For the sake of clarity I shall use the term "net product," even when the reference is to incomes generated, and avoid reference to either net or gross income.

19. Except that (actual or imputed) depreciation on nonproductive capital (housing, structures, office equipment, etc., but not consumer durables) is considered a consumption charge on output, reflecting the long-term use of a particular class of means of consumption. Consumer durables other than housing are treated as if they were consumed during the accounting period. In the latter respect, of course, Soviet practice accords with generally adopted Western procedures.

20. M. Eidel'man, *Ekonomika i matematicheskie metody*, 1967, no. 4, p. 533. On the same page, the residual category of final demand is said to cover replacement of losses not counted in production outlays and "defense needs." On the latter, see below, under the heading "NMP by Use."

21. Primary income data are not published, although the schema of the national balances indicates, and Soviet sources assert, that the estimates are compiled.

Soviet statisticians in dealing with depreciation in a large, *ex post*, national input-output table. Since it may be helpful in understanding the interrelations of the other national aggregates as well as of FMP, it seems useful to set out an explication in terms of an input-output transactions matrix and the relevant accounting equations.

	Consuming branches	Final demand
	I	II
Producing branches	$x_{11} \ldots x_{1n}$	F_1
	. .	.
	. .	.
	. .	.
	$x_{n1} \ldots x_{nn}$	F_n
	III	IV
Value-added	$W_1 \ldots W_n$	

Figure 4.1

Assume, to begin with, a closed economy with value flows portrayed in Fig. 4.1. The output of the ith branch of production (row distribution) is

$$X_i = \sum_{j=1}^{n} x_{ij} + F_i \quad i = 1, \ldots n \tag{1}$$

The outlays of the jth branch (column distribution) are

$$Y_j = \sum_{i=1}^{n} x_{ij} + W_j \quad j = 1, \ldots n \tag{2}$$

In the simplified scheme of Fig. 4.1, capital replacement is a material expenditure in quadrant I, the intermediate output quadrant,[22] which is integrated with other purchases from the capital-supplying branches—construction, machine building, and machinery repair.[23] Ignoring defense, final demand (quadrant II) comprises consumption (C) and net investment (A). Quadrant IV is left empty for reasons to be explained.

For any branch k,

$$X_k = Y_k \tag{3}$$

22. It is convenient to adopt the Soviet quadrant-numbering scheme, which differs from the Western in calling the final-demand quadrant II instead of I and the intermediate-transaction quadrant I instead of II. In both systems the value-added quadrant is III and the remaining one IV.

23. See Eidel'man, *Mezhotraslevoi balans*, pp. 217–18.

and for the economy as a whole,

$$\sum_{i=1}^{n} X_i = \sum_{j=1}^{n} Y_j \tag{4a}$$

or

$$\sum_{i=1}^{n}\sum_{j=1}^{n} x_{ij} + \sum_{i=1}^{n} F_i = \sum_{j=1}^{n}\sum_{i=1}^{n} x_{ij} + \sum_{j=1}^{n} W_j \tag{4b}$$

If total intermediate transactions are deducted from both sides of (4b),

$$\sum_{i=1}^{n} F_i = \sum_{j=1}^{n} W_j \tag{5}$$

This shows the equality of final use of NMP with "produced" NMP. In the absence of foreign trade and with zero capital losses, final use is equivalent to utilized net product. The equality of produced NMP with final use is true for aggregate net product and income; it is not necessarily true of any individual branch k:

$$W_k = \sum_{j=1}^{n} x_{kj} - \sum_{i=1}^{n} x_{ik} + F_k \quad k = 1, \ldots n \tag{6}$$

Branch value-added is equivalent to the difference between the branch's row and column totals in quadrant I (i.e., the difference between its intermediate output distributions and outlays) plus its allocation to final demand. Since quadrant I row totals and column totals are not necessarily equal, branch value-added is not necessarily equal to branch distributions to final demand.

The Soviet accounting system sets the production boundary at material product. Therefore, services are not a branch of production, and materials consumed by service activities are elements of final demand. Value added in services would be entered in quadrant IV, but is ignored here, since it does not enter into national income or product aggregates and does not affect the accounting relations.

Let us now introduce a complication necessitated by the inadequacy of Soviet capital accounting—specifically, the absence of data on capital replacement by type of asset and user branch. The solution adopted in the major Soviet input-output tables has been to enter a proxy for capital consumption in the form of depreciation allowances on productive capital (D) as a material cost outside quadrant I —i.e., as a row between quadrants I and III. Replacement of productive and nonproductive capital (R) is shown as a column of quadrant II and is defined equal to depreciation allowances on productive and nonproductive capital, actual or imputed. Depreciation on nonproductive capital is viewed in Soviet accounting as consumption and must be shown as an addition to

the consumption column. Thus, the material product section of the matrix has the peculiar form shown in Fig. 4.2.

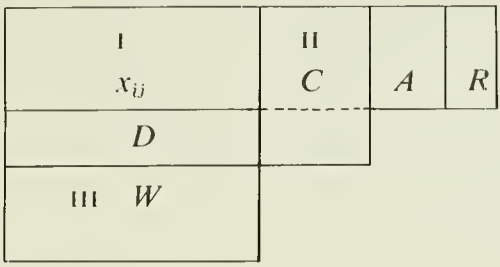

Figure 4.2

The definitional equations will now appear as follows:

$$X_k = \sum_{i=1}^{n} x_{ik} + D_k + W_k = \sum_{j=1}^{n} x_{kj} + [C + A + R]_k \tag{7}$$

$$W_k = \sum_{j=1}^{n} x_{kj} - \sum_{i=1}^{n} x_{ik} + [C + A + (R - D)]_k \tag{8}$$

$$\sum_{k=1}^{n} X_k = \sum_{k=1}^{n}\sum_{i=1}^{n} x_{ik} + \sum_{k=1}^{n} (D + W)_k = \sum_{k=1}^{n}\sum_{j=1}^{n} x_{kj} + \sum_{k=1}^{n} [C + A + R]_k \tag{9}$$

$$\sum_{k=1}^{n} W_k = \sum_{k=1}^{n} [C + A + (R - D)]_k \tag{10}$$

Since

$$\sum_{k=1}^{n} R_k = \sum_{k=1}^{n+\alpha} D_k ,$$

where α is the number of consumption columns, NMP may be expressed as the sum of material distributions to consumption, depreciation on nonproductive capital, and accumulation:

$$\sum_{k=1}^{n} W_k = \sum_{k=1}^{n} C_k + \sum_{k=n+1}^{n+\alpha} D_k + \sum_{k=1}^{n} A_k \tag{10a}$$

Final product, individual and total, appears simply as

$$F_k = (C + A + R)_k \tag{11}$$

$$\sum_{k=1}^{n} F_k = \sum_{k=1}^{n} (C + A + R)_k \tag{12}$$

As shown, FMP (12) is larger than NMP (10) by productive depre-

ciation allowances. However, this is not true for individual branches, where net product includes the difference between quadrant I row totals and column totals. FMP must exceed NMP in the aggregate, but only by the margin of depreciation on productive capital. The differences between final and net product can be larger and in either direction for individual branches. It is therefore clear that final product is of limited usefulness as an aggregate indicator. Branch final product is of independent interest and assumes special significance as the independent variable in planning models relating gross output to the economy's technological structure. In this context there has been extensive debate in the Soviet literature on the role of final-product measures.[24]

The Foreign-Trade Problem

The accounting equations set out in the preceding paragraphs all relate to a closed economy. Foreign trade has been incorporated into the Soviet input-output tables by viewing all imports (M) as "competitive," supplements to gross outlays distributed through the row of the corresponding material product branch, and exports (E) as an element of final demand, both at domestic prices. Two changes are now required in the symbolic expression of produced product and its distribution: (i) E is an element of F (this, of course, affects final product too); (ii) The equality of total outlays and total product requires the addition of imports to produced output to match the increment to distributed output. Therefore, the distributed equivalents of produced product—gross and net, individual branch and aggregate—will include the merchandise balance $E - M$.

Evidently, however, foreign trade is treated differently in the national balances, from which emerge the published data on GSP and NMP. Unfortunately, Soviet sources are reticent on this subject, so that it is necessary to infer existing procedures from various sources, Soviet and non-Soviet. It seems likely that the following description is correct, but some residual uncertainty remains.

The problem may be viewed from either the aspect of value addition or of output distribution. (i) Foreign trade is treated on a par with domestic trade—that is, designated a productive activity *in toto* and viewed as generating material product. In domestic trade the gross product is the trade markup. The analogous charge in foreign trade would not be easily determined, owing to the insulation of the domestic economy from world market prices. Because of the strict foreign trade monopoly exercised by the state and the arbitrariness (in the sense of the absence of links between world market and domestic prices) of the exchange rate,

24. See the contributions by Treml and Becker to J. Hardt et al., *Mathematics and Computers in Soviet Economic Planning* (New Haven: Yale Univ. Press, 1967).

accounting profits and losses are generated by foreign trade operations. If the level of domestic prices for goods entering foreign trade is higher than the price level of the world market translated into rubles at the official exchange rate, exports will generate losses and imports will yield profits. Clearly, these are indeed not "real" but bookkeeping entries. (ii) To preserve the equality of product and expenditure flows in the accounts, exports and imports must be valued at domestic prices. On the other hand, is not the "real" balance of trade that valued at foreign-trade prices?

Soviet source references to these questions concentrate on the difference in price basis between exports and imports.[25] Goods for export are transferred to the foreign-trade organization at prices net of turnover tax, whereas imported goods are sold to domestic enterprises at prices on a par with comparable domestically produced goods, including the tax. Since turnover tax generated by production is treated as an element of net product, it may be argued that the equivalent component of import prices should be treated the same way. Accordingly, that value would be entered as part of the gross product of trade.

The effect of this change on the accounting equations can be illustrated, for simplicity, with respect to NMP (the impact on GSP is identical). As indicated, the input-output table operates with (10) and (10a), augmented on the use side by $E - M$. But, in the national accounts, with the price difference between imports and exports added to the gross product of trade, produced NMP should presumably be expressed as

$$\sum_{k=1}^{n}[W + (M - E)]_k = \sum_{k=1}^{n}[C + A + (R - D) +$$

$$(E - M) + (M - E)]_k = \sum_{k=1}^{n}[C + A + (R - D)]_k \qquad (13)$$

This is the solution in principle; actual practice is more complex. According to U.N. sources,[26] the Soviet Union (like most other East European countries) is said to factor the balance of trade in domestic prices into two elements—a domestic-price translation of the balance in foreign-trade rubles (i.e., foreign-trade prices at the official exchange rate) and a so-called "account of price differences." With respect to the first element, an export balance in foreign-trade rubles is translated into domestic

25. Bor, *Balans narodnogo khoziaistva SSSR*, pp. 39–40, 47. A terser restatement is found in Bor's *Planovyi balans narodnogo khoziaistva SSSR*, pp. 69–70.

26. "A Note on Some Aspects of National Accounting Methodology in Eastern Europe and the Soviet Union," *United Nations Economic Bulletin for Europe*, 11, no. 3 (Nov. 1959): 57–58; Michael Kaser, "A Survey of the National Accounts of Eastern Europe," in Phyllis Deane, ed., *Income and Wealth*, ser. 9 (London: Bowes and Bowes, 1961), pp. 146–47.

prices by the ratio of exports at domestic prices to the same quantum at foreign-trade prices; if the balance is one of imports, the price coefficient relates to imports. The "account of price differences" must then show "the gain or loss of resources, valued at domestic prices, which results from an exact balance of imports and exports at foreign-exchange prices (at the actual value of whichever is the lower)." That is, the balance is set at the level of exports if there is an actual import surplus and at the level of imports if the surplus is of exports. If, using a U.N. example, the trade flows were as follows,

	Exports	*Imports*
At foreign-trade prices	100	75
At domestic prices	200	225
Ratio of domestic to foreign-trade prices	2	3

(i) the domestic-price equivalent of the trade balance at foreign-trade prices would be 50 (2 × 25) and (ii) the "account of price differences" would be 75 (an import profit of 150 and an export loss of 75—assumed exports of 75 times the price coefficient of 2, less the assumed value of 75). If, instead of an actual export surplus at foreign-trade prices, there were an import surplus,

	Exports	*Imports*
At foreign-trade prices	100	125
At domestic prices	200	375
Ratio of domestic to foreign-trade prices	2	3

the domestic price equivalent of the trade balance would be 75 (3 × 25) and the "account of price differences" 100 (import profit of 200—assumed imports of 100 times the price-coefficient of 3, less the assumed value of 100—and an export loss of 100).

In symbols, if E and M are total exports and imports, with subscripts d and f for domestic and foreign trade prices,

$$E_d - M_d \equiv (E_f - M_f)(E_d/E_f) - \{(M_d - M_f) - [M_f(E_d/E_f) - M_f]\} \tag{14}$$

and appropriate where $E_f > M_f$; if $E_f < M_f$, the appropriate identity is

$$E_d - M_d \equiv (E_f - M_f)(M_d/M_f) - \{[E_f(M_d/M_f) - E_f] - (E_d - E_f)\}. \tag{15}$$

The procedure outlined above is nowhere described in Soviet sources.

However, a recent document of the Council of Economic Mutual Assistance (CEMA) appears to confirm the U.N. account.[27] The CEMA document sets out to define the gross product of foreign trade and declares it equal to $M_d - E_d$, provided that $M_f = E_f$. Otherwise, the gross product of foreign trade T may be formulated as

$$T = (M_d - M_f) + (E_f - E_d) = (M_d - E_d) + (E_f - M_f) \qquad (16)$$

However, the document notes, "in drawing up the balance of gross product and national income, a number of [CEMA] countries in practice translate the foreign trade balance into prices at which imports are sold domestically or into prices at which exports are procured domestically." In these countries, the term $E_f - M_f$ is adjusted by the ratio of domestic to foreign-trade prices—export if $E_f > M_f$ and import if $E_f < M_f$. In this form, T is equivalent to the second (curly-bracketed) term of the identities derived above from the U.N. descriptions.[28] The CEMA document, however, does not specify which countries apply this adjustment of the basic formula.

Thus, the gross product of foreign trade is the "account of price differences." Without the adjustment described, the trade product may be viewed variously as the consolidated profit (or loss) on trade or as the resultant of the external balance expressed in both domestic and foreign trade prices. The existence of disparities between the internal and external price systems suggests the necessity of an adjustment to the balance expressed in foreign-trade rubles; there are not one but two adjustment factors, because the average disparity for imports is not the same as that for exports.[29]

Returning now to the NMP definitions, we see that in the national balances the open-economy counterpart of equation (10) most probably contains the term $(\beta - \pi)$ on the right side, so that produced and utilized product should read

$$\sum_{k=1}^{n} W_k + \pi = \sum_{k=1}^{n} [C + A + (R - D) + L]_k + \beta \qquad (17)$$

27. Sovet ekonomicheskoi vzaimopomoshchi, Postoiannaia komissiia po statistike, "Osnovnye metodologicheskie polozheniia po sostavlenniiu statisticheskogo balansa narodnogo khoziaistva," mimeographed (Moscow, 1969), pp. 48–50. I am grateful to Murray Feshbach of the U.S. Bureau of the Census for access to this source.

28. If $E_f > M_f$, $T = (M_d - E_d) + (E_f - M_f)(E_d/E_f) = (M_d - M_f)(E_d/E_f)$
If $E_f < M_f$, $T = (M_d - E_d) + (E_f - M_f)(M_d/M_f) = E_f(M_d/M_f) - E_d$
It is apparent that the second (curly-bracketed) term of identities (14) and (15) reduces to precisely the same form.

29. For an analysis of the rationale of the Soviet procedure see Franklyn D. Holzman, "Foreign Trade in the GNP Accounts," forthcoming. Holzman notes that Iu. Ivanov, *Vestnik statistiki*, 1968, no. 5, pp. 58–59, provides a formulation that turns out to be the same as that derived from the U.N. sources.

and

$$\sum_{k=1}^{n} W_k + (\pi - \beta) - \sum_{k=1}^{n} L_k = \sum_{k=1}^{n} [C + A + (R - D)]_k \quad (18)$$

where β and π are the aggregate adjusted trade balance and account of price differences, respectively, and L represents capital losses not charged to cost. Thus, $(M - E)$ on the left side of (13) is in fact π, as defined in (14) and (15), while the right side of (13) should contain the term represented by β.

This interpretation of the Soviet treatment of foreign trade helps explain a number of puzzles in the Soviet secondary literature and official statistics:

1. Aganbegian and Granberg distinguish between input-output and national balance production aggregates as follows:

> Statistical and planning organs compute GSP and NMP as the value of output disposed of within the country: utilized GSP is the sum of the replacement, consumption, and accumulation funds (NMP—the sum of consumption and accumulation); produced GSP is the sum of gross output and the import-export balance (NMP—the sum of net output and the import-export balance).
>
> However, in constructing interbranch balances [i.e., input-output tables—A.S.B.] utilized GSP (NMP) includes the export-import balance. On the other hand, the latter is not included in produced GSP (NMP).[30]

If consumption is understood as including depreciation on nonproductive capital (see equation 10a), the "statistical-planning organ" definition of NMP is consistent with (17) and (18). When Aganbegian and Granberg say that in input-output tables the export-import balance is not included in produced output, they probably have in mind the left side of (10) for an open economy; that is, by "utilized" output, which is said to include the balance, they probably mean "distributed" output.

2. The foreign-trade balance valued at foreign-trade prices is considerably smaller than the balance at domestic prices. Thus, in 1959 the latter has been reported as an import surplus of 3.8 billion new (38 billion old) rubles, whereas the former was an export surplus of 1.5 billion old rubles at 1960 exchange rates, or 0.3 billion new rubles at the 1961 exchange rates.[31] If it is the (adjusted) balance at foreign-trade prices that appears in the national income statement, it would help explain the small size of the reported margin between produced and utilized NMP. The recent

30. A. Aganbegian and A. Granberg, *Ekonomiko-matematicheskii analiz mezhotraslevogo balansa SSSR* (Moscow, 1968), p. 83, n. 1.

31. Efimov and Berri, p. 97; TsSU, *Narodnoe khoziaistvo SSSR v 1959*, p. 717 (this series is henceforth cited as *Narkhoz*); and *Narkhoz 60*, p. 744.

statistical yearbooks define that margin as consisting of "replacement of losses and the foreign-trade balance."[32] In 1959 the margin was 3.3 billion rubles (Table 4.6). If the foreign balance component was −3.8 billion rubles, "replacement of losses" should have amounted to 7.1 billion rubles, a surprisingly high figure. On the other hand, the 1959 value of β is 0.3 billion rubles, hence capital losses could not have exceeded 3 billion rubles.

3. The 1959 value of π is 4.1 billion rubles,[33] while by Table 4.6 the value of the right side of (17) is determined as 136.2 billion rubles. Therefore, ΣW_k is 132.1 billion rubles and different from the announced value of produced national income, 136.2 billions. ΣW_k should indeed be called total net production, as Volchkov warns us, and not produced national income, as in the input-output tables;[34] the yearbook figures on produced national income are gross of π.

Output and Outlays

Value of output for national accounting purposes is computed by several different methods—gross turnover, gross production, and net production. Gross turnover encompasses output at each stage of production, including all intraplant exchanges. The degree of "double" counting of value added depends on the number of stages of production. Gross production eliminates some of the double counting by netting out intraunit sales for the organizational unit serving as the basis of count. Thus, gross production "by plant" (*po zavodskomu metodu*) double-counts interplant but excludes intraplant transfers. Net production reflects only value added during the period of concern.

It is said that the basic method of computing GSP is the "plant method" —that is, as the sum of gross output by plant (enterprises, more correctly) —except that agricultural production is computed as gross turnover. In principle, it is possible to compute gross output "by the economy." This would in fact constitute a measure of final demand.

Industrial output is an aggregate of finished goods, semifabricates, output of subsidiary and auxiliary shops, unfinished production, and "operations of an industrial character" (e.g., repair, metal processing)

32. E.g., *Narkhoz 65*, p. 592. But see Becker, *Soviet National Income 1958–1964* (Berkeley: Univ. of California Press, 1969), p. 157, n. 41, for indications of Soviet waffling on the definition of the margin.

33. The gross value of output of trade and "other" branches of material product in 1959 was 19.2 billion rubles (Table 4.3 below). We also know that the gross product of trade, supply and sales, and procurement (excluding the account of price differences) came to 11.2 billion rubles, and that of "other" branches to 3.0 billions. Efimov and Berri, p. 97. Thus, there is a residual of 5 billion rubles which presumably includes the account of price differences. Whether it includes anything else is not clear; possibly, the estimate of β is overstated.

34. B. A. Volchkov, *Ekonomika i matematicheskie metody*, 1966, no. 3, p. 435.

performed on contract. Construction by an industrial enterprise's crew or transport services provided to others are counted not as industrial output but as construction or transport. Production excludes waste and defective products, even those sold. Semifabricates produced within the given enterprise and output of subsidiary and auxiliary shops are generally included in gross output in the measure of the value (i) sold outside the enterprise during the accounting period or (ii) of changes in stocks. Thus, output intended for further processing within the enterprise in a later period would be reckoned as gross output. Branches of industry with extended production cycles resulting in substantial stocks of unfinished production (for example, machine building and metalworking) count as gross production the value of increments in stocks of unfinished production during the accounting period.

Gross output of agriculture (where, as indicated, the measure is actually of gross turnover) sums the value of (i) raw materials yielded by the harvest of the given year, (ii) growth of long-term plantings, (iii) increments of unfinished crop production, (iv) output of livestock rearing (including increment in live weight of animals), and (v) output of livestock product not requiring the slaughter of the animal.

The activities grouped under the heading of construction have already been listed above. Gross output is simply the sum of finished and increments of unfinished production of the various elements of construction. In transportation, value of gross output is measured by receipts for freight transport, including loading and unloading operations, but net of the value of the freight carried. Soviet sources explain the avoidance of double counting here on the grounds that transport operations do not create new use values but simply process those created in industry or agriculture.[35] This rationale also explains the exclusion of the value of goods traded from the output of trade, supply and sales, and procurement, where an additional deduction is made: production is measured by the trade margin —the difference between purchase and sale price of the goods being traded, whether purchase is from an enterprise in another branch of the economy or from a subsidiary of the trading enterprise itself—net of transportation and communication expenditures.[36] Again, the purpose is to avoid double counting, although it is not clear why the exclusions from trade output should be limited to transport-and-communication services, or why such services are not deducted in calculating the value of construction product.

In the subtraction of material production expenditures (including depreciation) from gross to obtain net output, production expenditures are

35. Petrov, p. 243. Receipts are the measure of output in communication for production.

36. Petrov, pp. 244–45; Gozulov, p. 202. On the other hand, value of output in public catering excludes the basic materials, although use values are supposed to be created in that branch of the economy.

viewed in the same framework as gross output. Where output is measured as gross turnover, production expenses include those of internal turnover; these would be excluded in industry where the measurement is of gross production. A number of elements of production cost are not considered production expenditures in national-income accounting; taxes, interest on bank loans, insurance premiums, fines and penalties are the outstanding examples. These outlays are entered as net product.[37]

Output is valued at prevailing prices.[38] A number of Soviet economists have privately experimented with revaluation of national income to approach more closely to values as "socially necessary expenditures," but no such attempts have been published as official exercises. For intertemporal comparisons of national output, various sets of base-year prices have been used. The weights for NMP are known;[39] evidently the same weight years were used in GSP indexes.[40] Gross output of individual branches at times used different base years than did the national aggregates. Thus "constant prices" for gross industrial output meant 1 January 1952 prices during 1950–55 and 1 July 1955 prices from 1955 through 1967. Prices of 1926/27 are the weights of the agricultural production index only through 1931; 1951 prices are used for the 1932–56 segment. The basis of construction valuation and of investment is "estimate prices": those of 1936 were used through World War II, to be replaced by 1945 prices in 1946–48, 1949 prices in 1949, 1 July 1950 prices in 1950–55 and 1 July 1955 prices in 1956 (with adjustments of unit valuations in 1956 and 1962, overhead expenditures in 1958, equipment installation charges in 1959, and project-design operations in 1962). New estimate prices were introduced in 1969.

We do not know very much about Soviet methods of revaluing output at constant prices,[41] and some of the information that is available is con-

37. For details of the computation of net output in different branches of the economy, see Gozulov, pp. 206–11.

38. In agriculture this means (i) cost, for output consumed in kind for production needs by state and collective farms, or distributed as labor payments, with an upper limit at delivery prices for the subsidized state farms; (ii) average price realized in sales by collective farms and households, for income in kind of households, and (iii) realized price, for sales by collective farms, state farms, and households, whether to procurement organs or on the collective-farm market. These valuations differ from those employed by state and collective farms in their own accounts. Eidel'man, *Mezhotraslevoi balans*, p. 135, n. 1.

39. See below, under "Reliability of the Data."

40. B. Plyshevskii and Iu. Iaremenko, *Zakonomernosti dvizheniia obshchestvennogo produkta i natsional'nogo dokhoda* (Moscow, 1963), p. 64; Petrov, pp. 169, 249.

41. Cf. "Neither in the TsSU statistical yearbooks nor in its other publications is there an exposition of the methods of calculating [NMP at constant prices] other than the general indication [of price weights]." Vainshtein, p. 101. The problems of deflating net product, calculated as the difference between gross product and material outlays, are particularly difficult. On net product at "1926/27 prices," see Nove, pp. 267–73. See also Abram Bergson, *The Real National Income of Soviet Russia Since 1928* (Cambridge: Harvard Univ. Press, 1961), pp. 182–94.

tradictory. According to Petrov,[42] value of output indexes for branches of the economy that do not create new use values (transportation, communication, marketing) are calculated as the product of base-year values and physical output indicators—e.g., ton-kilometers in transportation. The indicator designated for trade is trade turnover, but this is a value index obtained by standard deflation. Plyshevskii and Iaremenko declare that the agricultural component of GSP at constant prices is calculated by revaluing physical output; the corresponding aggregates for industry, construction, transport, and trade are obtained by deflation with price indexes.[43] Evidently, net output at constant prices is obtained as the difference between deflated gross output and deflated material outlays. Thus far, final product at constant prices seems to have been calculated only for the period 1959–63.

Primary Incomes

National income in the Soviet concept is newly created value reflecting the effort of new labor in the accounting period. Thus NMP can be viewed in terms of income generation despite the absence of a corresponding denotation. The incomes in question are grouped in two categories: labor earnings—that is, earnings of productive labor in money and in kind, including earnings from self-employment (e.g., income from the private plot)—and surplus value (social-security payroll taxes, profits, collective-farm deductions to social funds, turnover taxes,[44] and the like), which is frequently euphemized as the "net income of society." In Soviet theory, surplus value is the predominant source of payments to nonproductive labor, whose earnings are derivative rather than income-generating in character.

No particular problem in national income accounting is posed by labor earnings,[45] but difficulties do arise in the handling of surplus-value elements. Soviet theory recognizes no barrier to inclusion of the turnover tax, which is regarded as a form of realizing income created in material

42. Petrov, pp. 249–50.

43. Plyshevskii and Iaremenko, p. 64. These authors claim that the method of using ton-kilometers to extrapolate base-year values of transportation was discontinued with the changeover from 1926/27 price weights.

44. Turnover tax is charged to industrial, trade, and procurement product. See Vainshtein, p. 113.

45. Eidel'man, *Mezhotraslevoi balans* table 23, facing p. 80, includes business travel allowances, free clothing, stipends paid within the enterprise, and subsidies (*dotatsiia*). Why subsidies should be entered at all, let alone under labor earnings, is not clear; it would seem to be inconsistent with the valuation of output. One might conjecture that the entry is for procurement subsidies, a problem discussed in the following text paragraph, except that the problem arose precisely because these subsidies had not been added back to income generated, after being deducted from turnover tax.

production and on a par with enterprise profits. The latter are recorded net of ordinary operating subsidies to *khozraschet* enterprises, such payments being treated as diminutions of net product. However, there is a class of subsidies whose treatment has been anomalous. The subsidies in question are those to procurement organizations required to bridge the gap between prices paid to farms and farmers, which have been rising almost monotonically since Stalin's death, and prices received from industrial processors of agricultural raw materials (so-called accounting prices), the rise in whose general level has been constrained in an effort to maintain a lid on retail prices.

Now, agricultural output sold to industry is valued in the national accounts at procurement prices, whereas the prices of industrial production obtained from processing the agricultural raw materials are based on the lower accounting prices. It has therefore been the practice to reduce turnover tax credited to industry by the amount of the procurement subsidies. Of course, production outlays in the processing branches of industry are also valued at accounting prices. It did not seem to occur to TsSU until it worked out an input-output table for 1966 that unless the subsidies were added back to production outlays, "a balance could not be obtained, inasmuch as output distributed at existing prices exceeded resources."[46] There is no indication how equality between value of output and expenditures thereon was obtained (addition of subsidies to value added?), nor how this problem had escaped notice until 1967 or 1968, especially during the construction of the earlier major input-output table for 1959.

Soviet theory denies that the payments in question are properly considered subsidies. Eidel'man's rebuttal is in part disingenuous—"First of all, procurement organizations, as is known, are profitable and are not on government subsidy"[47]—and in part merely the assertion that payments to procurement organizations "are covered by turnover-tax

46. M. Eidel'man, *Vestnik statistiki*, 1968, no. 8, p. 59 n. The difficulty uncovered by TsSU may be illustrated with the simplified input-output matrix outlined here. Industry

	Ind	Ag	F	Total
Ind			100	100
Ag	100			120
W	−20	120		
Total	80	120		

pays 100 for purchases from agriculture that are valued at 120 as agricultural output. Balance will be restored when the subsidy of 20 is added back.

47. Eidel'man is referring to ordinary profits and losses of enterprises, not the special subsidies I am discussing. On the relative magnitudes, see Becker, *Soviet National Income, 1958–1964*, pp. 371–79, 478.

proceeds received from the sales of products derived from agricultural raw materials."[48] Contrary to the implication of the latter statement, turnover-tax revenue is not earmarked for procurement subsidies, but perhaps the defense should be understood to mean that turnover taxes would be the financial source for elimination of the gap if industry wholesale prices were to be raised.

Surplus value, apart from the components listed earlier, is known to include interest on loans paid to banks and such items of state budget revenue as forest income and local taxes and fees.[49] The total probably also includes an allowance for the differential between domestic and foreign-trade ruble prices, as was explained earlier, as well as special charges for worker training, fines and penalties, and even "economies of administrative expenses deducted to the budget."[50] The bulk of these incomes have been grouped under the heading of "money accumulation." For the 1960's the statistical yearbooks have begun to publish the total size (excluding, however, accumulation by collective farms) and partial distribution of this category;[51] the data for earlier years are often confusing and contradictory.[52]

A relatively minor problem in terms of the size of the numbers involved, but one rarely discussed in Soviet sources, is the treatment of expenditures on nonproductive services by the productive sphere. The nature of the problem may be gauged by asking, What is the impact on national income of transferring from a Western-type (full) to a Soviet-type (partial) accounting of services? In terms of an input-output table, the answer may be phrased as follows.

To begin with, the service row and column are deducted, but material expenditures of the service branch are added to nonproductive consumption in quadrant II. (The shifting of value added in services to quadrant IV can be ignored, as it has no effect on the accounting equations.) If there are n branches of material production and one of services, total gross outlays are reduced by $\Sigma_{j=1}^{n} x_{sj} + X_s$, where the subscript s denotes the service branch. Total gross output is reduced only by X_s. Therefore, aggregate gross output must be further reduced or aggregate gross outlays increased by $\Sigma_{j=1}^{n} x_{sj}$. This is, of course, also true for total value-added.[53] Thus, when services are excluded, the input-output table is put

48. Eidel'man, *Vestnik statistiki*, 1968, no. 8, pp. 60–61.
49. A. Zverev, *Natsional'nyi dokhod i finansy SSSR* (Moscow, 1961), p. 57.
50. Eidel'man, *Mezhotraslevoi balans*, table facing p. 80.
51. *Narkhoz 67*, pp. 857, 859; and *Narkhoz 68*, pp. 743, 746.
52. Becker, *Soviet National Income, 1958–1964*, pp. 445–50.
53. Total value added is reduced by W_s, whereas aggregate final demand is reduced by F_s but increased by $\Sigma_{i=1}^{n} x_{is}$. Therefore, either final demand or value added must be altered by $W_s - (F_s - \Sigma_{i=1}^{n} x_{is})$. This expression is in fact equal to $\Sigma_{j=1}^{n} x_{sj}$, as can be seen from the following.

out of balance. To restore balance, gross outlays must incorporate expenditures on services consumed by material-production branches, or this volume of expenditures must be deducted from the value of gross output.

Evidently, Soviet accounting includes productive branch outlays on nonproductive services in net output.[54] I have already noted the presence of such items as business travel allowances and interest on bank credit in the list of net product components, although both passenger transportation and banking per se are nonproductive activities.[55] Presumably, the fee for research bought on contract is treated similarly, although this difficulty may be avoided by the incorporation of such research organizations into the productive sphere.[56]

On a purely practical level, we might note in passing, the TsSU experiences some difficulty in distinguishing elements of net income from material expenditures, because these are in some cases commingled in enterprise accounting. For example, a residual category of enterprise costs called "other money expenditures" comprises both types of outlay. Evidently, the TsSU uses a variety of rules of thumb in disentangling one from the other.[57]

NMP by Use

TsSU publishes only an abbreviated version of the distribution of NMP by use (Table 4.6 below). In *Narkhoz 64*, but neither before nor since, a finely detailed breakdown of nonproductive consumption by product group was published, providing figures for the years 1959–63. Enough information is available that the consumption fund's scope and coverage can be sufficiently well defined, with one exception to be discussed.

The gross output of services is

$$X_s = \sum_{j=1}^{n+1} x_{sj} + F_s = \sum_{i=1}^{n+1} x_{is} + W_s$$

Moving F_s to the outlay side of the equation and subtracting x_{ss} from both sides, we get

$$\sum_{j=1}^{n} x_{sj} = W_s - F_s + \sum_{i=1}^{n} x_{is}$$

54. Petrov, p. 423, declares that outlays on nonproductive services are not considered part of material production expenditures, but does not deny that the services find their way into net product. Indeed, the other charges mentioned as excluded from material production expenditures along with services are all elements of net product.

55. Formerly interest was reckoned as an enterprise cost; under the post-1965 reforms, interest charges are paid out of profits; in both cases the entry in the national income accounts is in net income. The issue of payment for a service is sidestepped by dubbing interest "a part of realized surplus product transferred by socialist enterprises to the state credit system in return for (*za*) the temporary use of funds available." I. Levchuk, A. Cheblokov, *Planovoe khoziaistvo*, 1969, no. 7, p. 85.

56. See the text associated with note 111 below.

57. See Treml, *The 1959 Intersectoral Flow Table*, 1:20–21.

Thus, the components of consumption by channel of expenditure can be reconstructed, with some precision for personal consumption, with less confidence for institutional consumption.[58]

The accumulation fund comprises net fixed capital investment (including livestock), increments of inventories[59] and reserves, and "other expenditure." "Reserves" here means state reserves, as distinct from stocks held by state enterprises, cooperatives, and collective farms. The problem of the composition and size of this residual raises a major and only partially solved issue of the use distribution of NMP, the classification of defense expenditures.

The classification of military outlays in Soviet national accounting has been the object of considerable speculation.[60] Little hard evidence is available from Soviet sources, notably reticent on this score, with the result that a number of questions remain unresolved. It is unlikely that Soviet secrecy in this area will soon be dispelled, particularly as it is difficult to perceive internal USSR incentives for broader dissemination of the information.

Defense as an activity is outside the bounds of material production. Accordingly, the incomes generated in the defense establishment do not form part of primary incomes, and the activity cannot add to material product. On the other hand, labor engaged in the production of armaments and in the construction of military facilities is productive, and its output must presumably increase the social aggregate. In what categories of distributed output are defense goods and services to be found? From the published literature there are few certainties and many puzzles:

1. One of the few certainties or near-certainties is that military subsistence is classified with personal consumption.[61]

2. It is a reasonable presumption that public consumption includes material expenditures in current maintenance of the military. A likely example is POL, but the category should also include the nonwage component of R&D outlays and hence also of military-space R&D.

3. One would suppose that military construction would enter accumulation in fixed capital, whether the productive or nonproductive

58. Becker, *Soviet National Income 1958–1964*, pp. 159–60.

59. In the state sector, inventory investment is calculated as the difference between end-year and beginning-year stock values, adjusted for price changes during the course of the year—upwards, by the amount of reduction in value of inventories due to price decreases, downwards for price increases. P. Moskvin, *Vestnik statistiki*, 1968, no. 6, p. 53. Fixed and inventory investment include changes in private sector holdings (buildings, structures, equipment, livestock, and agricultural products).

60. See chap. 7 of A. Becker, *Soviet National Income 1958–1964* and the references to other work cited there. In what follows I have also benefited from correspondence with Vladimir Treml.

61. See sources cited in ibid., p. 158, n. 42; also *Ekonomika torgovli* (Moscow, 1968), p. 106.

component. But there is nothing in Soviet sources that directly verifies or refutes this notion.

4. Similarly, one would also expect that military hardware would be found in accumulation, although occasional ambiguous references in Soviet sources can be interpreted to suggest classification with consumption.[62] Logically, armaments might be classed either with investment in equipment or with additions to state reserves or both. There are a number of Soviet references to the military character of some state reserves. It is not always clear in such statements whether the reference is to stocks of civilian goods for emergency disposition or to stocks of military equipment per se. However, Bor has declared that the reserves included "means of defense of a special nature."[63]

The suppositions in 3 and 4 are beclouded by uncertainties and contradictory indications in the available evidence. Thus, the input-output literature features a final-demand category called "other expenditure," in addition to consumption and investment (net and replacement), that has been identified with defense.[64] An extra-consumption-plus-investment category for military expenditures appears in Voznesenskii's breakdown of national income use during World War II and in Plyshevshii's discussion of changes during the 1950's.[65] An attempt elsewhere to estimate the magnitudes of the defense components in NMP in 1958–64 by exhausting the nondefense components of consumption and accumulation yielded ambiguous results: the computed consumption residuals are relatively small and constant in size; those for accumulation, believed to represent largely additions to reserves, are 5 billion rubles in 1958, less than 2 billion rubles in 1959, but 5–9 billions thereafter. How much of the presumed additions to reserves is purely military cannot be ascertained.[66]

The preceding does not marshal all the evidence bearing on the subject and the discussion could be pursued at length. However, little additional clarification would be obtained and the matter is perhaps best left here. Elsewhere I have referred to the complexity of Soviet government accounting and our ignorance of its details.[67] The possibilities of concealment have probably not been reduced significantly since Stalin's death.

62. E.g., V. Kuleshov, *Sotsialisticheskoe vosproizvodstvo* (Moscow, 1961), p. 45, lists a "fund for strengthening the national defense" as a component of consumption.

63. Bor, *Voprosy metodologii planovogo balansa narodnogo khoziaistva SSSR*, p. 311.

64. In the writing of Eidel'man: e.g., *Vestnik statistiki*, 1962, no. 10, p. 4; idem, *Mezhotraslevoi balans*, table 23, facing p. 80.

65. See Becker, *Soviet National Income 1958–1964*, pp. 156–57.

66. Ibid., pp. 158–61.

67. Ibid., pp. 165–66.

2. The Data[68]

The Published Time Series

Indexes of aggregate GSP and produced NMP are available or can be computed from the statistical yearbooks for all post-World War II

Table 4.1. Indexes of GSP and NMP: 1928, 1932, 1937, 1940, 1945–68

	GSP			*NMP*		
	1940 = 100	*1950 = 100*	*Annual increase, %*	*1940 = 100*	*1950 = 100*	*Annual increase, %*
1928	. .[a]	. .	. .	19	11	. .
1932	. .	. .	. .	36	22	. .
1937	. .	. .	. .	75	46	. .
1940	100	62	. .	100	61	. .
1945	83	52	. .	83	51	. .
1946	76	47	−8	78	48	−6
1947	92	57	21	93	57	19
1948	114	71	23	115	70	23
1949	134	83	18	136	83	19
1950	161	100	20	164	100	20
1951	179	111	11	184	112	12.3
1952	198	123	11	204	125	10.9
1953	217	135	10	224	136	9.5
1954	243	151	12	251	153	12.2
1955	270	167	11	281	171	11.9
1956	299	186	11	313	191	11.3
1957	324	201	8	334	204	7.0
1958	357	221	10	376	229	12.4
1959	386	240	9	404	246	7.5
1960	417	258	8	435	265	7.7
1961	444	276	7	465	283	6.8
1962	472	293	6	491	300	5.7
1963	489	304	4	511	312	4.0
1964	528	328	8	559	340	9.3
1965	570	353	8	597	364	6.9
1966	613	381	8	645	393	8.1
1967	664	412	8	701	427	8.6
1968	712	442	8	753	459	7.5

a. In this and the following tables, the sign ". ." means not available.

Sources: Taken or computed from *Narkhoz 61*, p. 597; *64*, p. 87; *65*, pp. 55, 85; *Vestnik statistiki*, 1969, no. 4, p. 88; *Narkhoz 68*, pp. 44, 47, 144, 569.

68. This section presents and comments upon the national income and product data available in official sources. My purpose is in part simply to provide a convenient roundup of this material, but also to test, to the extent possible, its reliability. The available series are shown in Tables 4.1–4.8. The sources are mainly the statistical yearbooks in the *Narkhoz* series. Additional data were derived from the anniversary volume, TsSU, *Strana sovetov za 50 let* (Moscow, 1967), abbreviated to *SS 50 let*, and issues of the TsSU monthly, *Vestnik statistiki*.

years and in the case of NMP for the prewar benchmark years 1928, 1932, 1937, and 1940.[69] They are shown in Table 4.1.

Official statistics do not provide nearly as extensive time coverage for indexes of branch net output as they do for aggregate NMP; the available information covers only 1952, 1953, and 1958–67 (Table 4.2). Indexes of gross branch output have not been reported at all. The branches distinguished in the official data are industry, agriculture, construction, freight transportation and communication for production, and other branches, the latter consisting largely of trade, procurement, and materials supply.[70]

The values of branch product, net and gross, are shown at current prices in Table 4.3 along with their percentage shares in total product. The branch structure of intermediate output is clearly different from that of net output: industry accounts for more than 60 percent of gross but only 50-odd percent of net output; the direction of the difference is reversed for agriculture and "other" branches. Thus, intermediate output originates

Table 4.2. Indexes of NMP produced by branch of origin: 1952, 1953, 1958–67 (1958 = 100)

	Industry	*Agriculture*	*Construction*	*Transportation communication*	*Other*	*Total NMP produced*
1952	51	70	51	45	57	54
1953	57	69	55	51	61	59
1958	100	100	100	100	100	100
1959	110	98	110	122	109	108
1960	119	102	122	140	116	116
1961	131	104	124	149	123	124
1962	143	105	126	157	127	131
1963	156	94	130	170	127	136
1964	167	113	138	186	137	149
1965	184	109	148	200	148	159
1966	201	118	157	219	152	172
1967	222	119	174	242	172	187

Sources

1952. Computed from the 1962 entries divided by 1962 indexes on a 1952 base in *Narkhoz 62*, p. 482.

1953. Computed from the 1960 entries divided by 1960 indexes on a 1953 base in *Narkhoz 60*, p. 153.

1958–67. Vestnik statistiki, 1969, no. 2, p. 80.

69. NMP figures for prewar years appearing in the post-1955 statistical yearbooks are unchanged from the series published before and just after the war, e.g., M. Kolganov, *Narodnyi dokhod SSSR* (Moscow, 1940), p. 53. GSP indexes are unique to the recent yearbooks.

70. Vainshtein, p. 115, believes forestry is included in the residual group rather than with agriculture.

largely in industry: the proportion was over two-thirds in 1958 and reached almost three-quarters in 1967; the corresponding figures for agriculture are only one-sixth and one-ninth. The time pattern of branch shares in intermediate output generally corresponds closely to that of net output.

In Tables 4.2 and 4.3 the structure of total output is viewed from the originating-branch standpoint only. Soviet data on final use of NMP are presented in absolute values in Table 4.6 and in percentage distribution

Table 4.3 Structure of GSP and NMP by branch of origin at current prices, 1958–68

	Industry		*Agriculture*		*Construction*		*Transportation communication*		*Other*		*Total*
	BR	*%*	*BR*	*%*	*BR*	*%*	*BR*	*%*	*BR*	*%*	*BR (100%)*
I. *Gross Social Product*											
1958	(153.8)[a]	59.3	(52.9)	20.4	(25.7)	9.9	(9.6)	3.7	(17.4)	(6.7)	259.3
1959	(170.9)	61.4	(48.1)	17.3	(28.7)	10.3	(11.4)	4.1	(19.2)	6.9	278.3
1960	189.5	62.4	49.3	16.2	31.9	10.5	12.9	4.2	20.2	6.7	303.8
1961	. .	63.1	. .	16.1	. .	10.2	. .	4.2	. .	6.4	. .
1962	. .	63.4	. .	16.9	. .	9.5	. .	4.0	. .	6.2	. .
1963	(235.3)	64.5	(58.4)	16.0	(34.7)	9.5	(15.0)	4.1	(21.5)	5.9	364.8
1964	249.1	(64.1)	63.9	(16.4)	36.6	(9.4)	16.3	(4.2)	22.7	(5.8)	388.6
1965	266	(63)	71	(17)	40	(10)	18	(4)	25	(6)	420
1966	284	(63)	80	(18)	43	(10)	19	(4)	25	(6)	451
1967	321	(64)	81	(16)	50	(10)	21	(4)	29	(6)	502
1968	356	(65)	84	(15)	56	(10)	22	(4)	32	(6)	550
II-1. *Net Material Product*											
1958	64.2	(50.3)	30.9	(24.2)	12.1	(9.5)	5.6	(4.4)	14.9	(11.7)	127.7
1959	(71.2)	52.3	(29.0)	21.3	(12.9)	9.5	(6.5)	4.8	(16.5)	12.1	136.2
1960	75.8	52.3	29.7	20.5	14.5	10.0	7.7	5.3	17.3	11.9	145.0
1961	(79.5)	52.1	(32.1)	21.0	(15.0)	9.8	(8.6)	5.6	(17.6)	11.5	152.9
1962	(86.1)	52.3	(37.0)	22.5	(14.6)	8.9	(8.7)	5.3	(18.1)	11.0	164.6
1963	(91.5)	54.2	(34.6)	20.5	(15.2)	9.0	(9.3)	5.5	(18.2)	10.8	168.8
1964	97.0	(53.5)	39.0	(21.5)	15.9	(8.8)	10.1	(5.6)	19.3	(10.6)	181.3
1965	100.1	(51.7)	43.6	(22.5)	17.9	(9.3)	11.1	(5.7)	20.8	(10.7)	193.5
1966	104.6	(50.4)	50.3	(24.3)	19.1	(9.2)	12.2	(5.9)	21.2	(10.2)	207.4
1967	115.9	(51.4)	50.7	(22.4)	21.2	(9.4)	13.3	(5.9)	24.4	(10.8)	225.5
1968	126.3	(52.0)	52.0	(21.4)	23.4	(9.6)	14.5	(6.0)	26.9	(11.1)	243.1

a. Figures in parentheses are derived from other type of entry in the row.
Sources: *Narkhoz 63*, p. 54; *64*, pp. 67, 577; *65*, pp. 63, 589, 591; *68*, pp. 48, 569, 570; M. Eidel'man, *Voprosy ekonomiki*, 1969, no. 9, p. 82.

in Table 4.7. Final-use distributions involve two concepts of NMP, produced and utilized. As indicated, the former is larger than the latter by the amount of material losses not charged to current cost and the foreign-trade balance. NMP is utilized in consumption and in accumulation and "other expenditure." Consumption, in turn, is subdivided into personal

consumption and material outlays of the public sector; accumulation and "other expenditure" are said to consist of net fixed capital investment and increases of inventories and of reserves.

Reliability of the data

Reliability is assessed here largely by tests of consistency, internally with respect to the body of national income data and, in part, against the

Table 4.4. Current and constant price values (billion rubles) of total output and implicit price deflators, 1958–68

	GSP		*NMP*		*Ratio of current to constant-price values (1958 = 100)*	
	Current prices	*Constant prices*	*Current prices*	*Constant prices*	*GSP*	*NMP*
1958	259.3	259.3	127.7	127.7	100.0	100.0
1959	278.3	(280)	136.2	137.3	101	99.2
1960	303.8	(303)	145.0	147.9	100	98.0
1961	. .	. .	152.9	157.9	. .	96.8
1962	. .	. .	164.6	166.9	. .	98.6
1963	364.8	(355)	168.8[a]	173.7[a]	103	97.2[a]
1964	388.6	(383)	181.3	189.8	102	95.5
1965	420	(415)	193.4[b]	202.9[b]	101	95.3[b]
1966A	. .	. .	205.3	218.1	. .	94.1
1966B	451	(445)	207.4	(219.3)	101	94.6
1967	502	(482)	225.5	(238.2)	104	94.7
1968	550	(518)	243.1	(256.1)	106	94.9

Figures in parenthesis are obtained by projecting reported absolute values by index numbers of growth.

a. Preliminary figures for 1963 according to *Narkhoz 63,* p. 501, were 169.1 BR current prices and 173.9 BR constant prices; the ratio of the former to latter is 97.2. With amortization allowances calculated at the 1962 rates, the current price figure would have been 171.4 BR and the implicit deflator 98.6.

b. Preliminary figures for 1965 according to *Narkhoz 65,* p. 589: current-price, 192.6 BR; constant price, 203.4 BR; implicit deflator 94.7.

Sources

GSP: 1958, 1960, 1963: *Narkhoz 64,* pp. 65, 67. 1959: Eidel'man (see sources to Table 4.3). 1964: *Narkhoz 65,* pp. 61, 63. 1965–68: *Narkhoz 68,* pp. 45, 48.

NMP: 1958–1964: *Narkhoz 65,* p. 589. 1965, 1966A: *SS 50 let,* p. 242. 1966B–1968: *Narkhoz 68,* p. 569.

yardstick of various indicators of price movements, also officially released.

1. *Chainlinking the NMP index: Are the links as described?* Whether identified on a 1913, 1940, 1945, or 1950 base, the indexes of Table 4.1 are chainlinked. With respect to NMP, the yearbooks indicate the follow-

ing shifting price weights: "constant" prices of 1926–27 through 1950; 1951 prices for 1951–55; 1956 prices for 1956–58; 1958 prices for 1959–65; 1965 prices thereafter. Nothing is said about the weights for GSP, but it is vaguely implied that they are the same.[71]

It is not possible to test these assertions or inferences by, say, comparing the annual rates of growth of an absolute value series at constant

Table 4.5. TsSU comparisons of Soviet and U.S. national output, Soviet concept, at current dollars, 1960–68

	Aggregate NMP			*Per capita NMP*		
	USSR		*U.S.*	*USSR*		*U.S.*
	At official exchange rate	*At purchasing power parity*		*At official exchange rate*	*At purchasing power parity*	
Dollar values[a]						
1962	. .	198.0[b]	329.4	. .	894[b]	1766
1963	188	209	346	836	930	1825
1964	202	231	371	885	1013	1929
1965	214	248	401	928	1076	2060
1967	249.6	292.9	467.6	1060	1244	2348
1968	270.1	326.4	513.2	1136	1373	2552
USSR as percent of U.S.						
1960	*"about 60"*			*"a little over 50"*		
1961	*"more than 60"*			*"more than 50"*		
1962	. .	60.1		. .	50.6	
1963	54.3	60.4		45.8	51.0	
1964	54.4	62.6		45.9	52.5	
1965	53.4	61.8		45.0	52.2	
1967	53.4	62.6		45.1	53.0	
1968	52.6	63.6		44.5	53.8	

a. Aggregate NMP in billion dollars, per capita NMP in dollars.

b. Basis for translation from rubles to dollars not given but assumed to be purchasing-power parity from the size of the succeeding values.

Sources

Dollar values. *Narkhoz 62*, p. 74; *63*, p. 71; *64*, p. 89; *65*, p. 87; *67*, p. 142; *68*, p. 146.

USSR as percent of U.S. 1960–61: *Narkhoz 60*, p. 168, and *61*, p. 139. For other years computed from dollar values.

prices with the published rates of growth. TsSU does not publish absolute values of GSP at constant prices. For NMP, such a series is available only from 1958 through 1966 (Table 4.4), but it is impossible to make the indicated test for the one link change, from 1958 to 1965 prices in 1966, because the 1966 NMP figure at constant prices is clearly not valued at

71. *Narkhoz 67*, p. 919. As noted earlier, we know that in the first half of the sixties GSP calculations used 1958 weights.

Table 4.6. NMP by final use at current prices, 1950–68 (billion rubles)

	Consumption			*Accumulation and other expenditure*								
	Personal consumption	*Material outlays in organizations servicing households*	*Material outlays in science and administration*	*Total*	*Increment of fixed capital*			*Increment of material working capital and reserves*	*Total*	*Total utilized NMP*	*Capital losses and undistributed expenditure*	*Total produced NMP*
					Productive	*Nonproductive*	*Total*					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1950	51.2	5.1		56.3	7.2	2.5	9.7	8.0	17.7	74.0	. .	. .
1951	53.2	5.1		58.3	7.4	2.9	10.3	9.7	20.0	78.3	. .	. .
1952	54.8	5.2		60.0	7.1	2.9	10.0	11.4	21.4	81.4	. .	. .
1953	58.4	5.5		63.9	7.3	3.4	10.7	10.7	21.4	85.3	. .	. .
1954	64.0	6.0		70.0	8.9	3.8	12.7	8.2	20.9	90.9	. .	. .
1955	66.4	6.1		72.5	9.7	4.0	13.7	11.4	25.1	97.6	. .	. .
1956	69.9	6.6		76.5	11.0	4.5	15.5	13.6	29.1	105.6	. .	. .
1957	77.6	7.1		84.7	11.2	6.0	17.2	9.2	26.4	111.1	. .	. .
1958	84.0	8.1		92.1	13.5	8.3	21.8	12.8	34.6	126.7	1.0	127.7
1959	88.0	7.2	2.1	97.3	13.7	9.1	22.8	12.8	35.6	132.9	3.3	136.2
1960	93.9	8.2	2.4	104.5	15.7	9.6	25.3	12.9	38.2	142.7	2.3	145.0
1961	96.7	8.7	2.7	108.1	15.6	9.7	25.3	17.6	42.9	151.0	1.9	152.9
1962	105.0	9.5	3.0	117.5	18.2	10.2	28.4	16.6	45.0	162.5	2.1	164.6
1963	110.3	10.4	3.4	124.1	17.4	10.8	28.2	14.1	42.3	166.4	2.4	168.8
1964	115.5	11.1	3.8	130.4	19.2	9.7	28.9	20.4	49.3	179.7	1.6	181.3
1965	124.9	11.2	4.2	140.3	17.5	10.4	27.9	22.3	50.2	190.5	3.0	193.5
1966	133.2	12.2	4.6	150.0	18.9	10.8	29.7	24.5	54.2	204.2	3.2	207.4
1967	144.0	13.1	5.0	162.1	19.4	12.4	31.8	27.6	59.4	221.5	4.0	225.5
1968	155.1	14.3	5.4	174.8	20.2	12.9	33.1	30.8	63.9	238.7	4.4	243.1

Sources

For all years, column 11 entries represent the difference between figures in columns 10 and 12. Column 12 figures are taken from Table 4.3. *1950–1957: Vestnik statistiki,* 1966, no. 4, p. 96. *1958* and *1964: Narkhoz 65*, p. 592. *1959–1963: Narkhoz 64*, pp. 574, 578. *1965–1967: Narkhoz 68*, pp. 571–72.

Table 4.7. Percent distribution of utilized NMP by final use, 1950–1968

	Consumption				*Accumulation and other expenditure*				
		Material outlays in			*Increment of fixed capital*				
	Personal consumption	*Organizations servicing households*	*Science and administration*	*Total*	*Productive*	*Nonproductive*	*Total*	*Increment of material working capital and reserves*	*Total*
1950	69.2	6.9		76.1	9.7	3.4	13.1	10.8	23.9
1951	67.9	6.5		74.5	9.5	3.7	13.2	12.4	25.5
1952	67.3	6.4		73.7	8.7	3.6	12.3	14.0	26.3
1953	68.5	6.4		74.9	8.6	4.0	12.5	12.5	25.1
1954	70.4	6.6		77.0	9.8	4.2	14.0	9.0	23.0
1955	68.0	6.3		74.3	9.9	4.1	14.0	11.7	25.7
1956	66.2	6.3		72.4	10.4	4.3	14.7	12.9	27.6
1957	69.8	6.4		76.2	10.1	5.4	15.5	8.3	23.8
1958	66.3	6.4		72.7	10.7	6.6	17.2	10.1	27.3
1959	66.2	5.4	1.6	73.2	10.3	6.8	17.2	9.6	26.8
1960	65.8	5.7	1.7	73.2	11.0	6.7	17.7	9.0	26.8
1961	64.0	5.8	1.8	71.6	10.3	6.4	16.8	11.7	28.4
1962	64.6	5.8	1.8	72.3	11.2	6.3	17.5	10.2	27.7
1963	66.3	6.3	2.0	74.6	10.5	6.5	16.9	8.5	25.4
1964	64.3	6.2	2.1	72.6	10.7	5.4	16.1	11.4	27.4
1965	65.6	5.9	2.2	73.6	9.2	5.5	14.6	11.7	26.4
1966	65.2	6.0	2.3	73.5	9.3	5.3	14.5	12.0	26.5
1967	65.0	5.9	2.3	73.2	8.8	5.6	14.4	12.5	26.8
1968	65.0	6.0	2.3	73.2	8.5	5.4	13.9	12.9	26.8

Source: Computed from Table 4.6.

Table 4.8. Indexes and annual relative increases of produced and utilized NMP, 1958–68

	Indexes, 1958 = 100		*Annual percent increases*	
	Produced (*1*)	*Utilized* (*2*)	*Produced* (*3*)	*Utilized* (*4*)
1959	108	106	7.5	6
1960	116	115	7.7	8
1961	124	121	6.8	6
1962	131	128	5.7	5–6
1963	136	132	4.0	3–4
1964	149	144	9.3	9
1965	159	153	6.9	6
1966	172	164	8.1	8
1967	187	176	8.6	7
1968	201	189	7.5	7

Sources: Produced NMP: Table 4.1. Utilized NMP: *Narkhoz 65*, p. 59; *68*, p. 569n.

1965 prices. If it were, NMP would have increased by 13 percent in 1966 (218.1 billion rubles ÷ 193.4 billion rubles − 100) whereas the index growth cited in Table 4.1 is only 8 percent. Evidently, the series of Table 4.4 is valued throughout at 1958 prices.

If 1958 and 1965 prices differ significantly, the 1965–66 relative increment computed in 1965 prices ought to differ noticeably from the same increment at 1958 prices. On the assumption that the indexes of Table 4.1 are indeed chainlinked, comparison of Tables 4.1 and 4.4 shows that the increments are roughly equal (8.1 compared to 7.5 percent). However, this test is too limited in scope and based on too little information to afford a basis for conclusions on the reliability of the yearbook's description of the procedure for linking the NMP index.

2. *Have there been revisions of the indexes of branch net output?* Entries in Table 4.2 for the years 1958–67 are taken from a 1969 source that provides, although for a relatively short period, the first comprehensive series of branch net-output indexes. Previously, only fragments of such information could be found in official sources.[72] For four time periods (1959–60, 1960–61, 1958–63, 1958–64), comparisons can be made between the percentage increases reported in the earlier material with those of the 1969 source. Of the 24 comparisons possible, 21 show no noteworthy difference but three do (Table 4.9). In each case the differences may be accountable at least in part to the substitution of later, revised data for the preliminary estimates of the early source. This is the likely explanation of the difference for 1958–64; the reasoning seems less plausible with respect to the 1959–60 difference.

72. *Narkhoz 60*, p. 153; *61*, p. 598; *62*, p. 482; *63*, p. 502; *64*, p. 577.

Table 4.9. Comparison of sources on percent increase in net output

	1959–60	*1960–61*	*1958–64*
Transportation and communication			
Early source	n.a.	9	80
1969 source	n.a.	6	86
"Other branches"			
Early source	12	n.a.	n.a.
1969 source	6	n.a.	n.a.

n.a.: not applicable

3. *Consistency of indexes and constant-price values of net output, branch and total.* The total NMP index shown in Table 4.2 can be translated into an absolute value series with the aid of the reported value for 1958, 127.7 billion rubles (Table 4.3). The calculated series[73] can then be compared (Table 4.10) with the reported series of total NMP at constant

Table 4.10. Consistency between calculated and reported NMP series, 1959–66

	NMP at Constant Prices		*Deviation of*
	Calculated (1)	*Reported* (2)	*(1) from (2)* (3)
1959	137.9	137.3	–
1960	147.9	147.9	–
1961	158.0	157.9	+0.1
1962	167.0	166.9	+0.1
1963	173.7	173.7	–
1964	189.0	189.8	−0.8
1965	202.9	202.9	–
1966	219.4	218.1	+1.3

–: zero or insignificant

prices (Table 4.4), which, as indicated earlier, appears to be at 1958 prices (billion rubles). In Table 4.10, for all years except 1964 and 1966 the calculated and reported series are identical or nearly so. The larger deviation in 1966 is probably explainable by the use of a preliminary (1967 source) figure for the reported series, whereas the figure from the calculated series is based on the 1969 source indexes. To judge by the difference between the two current-price figures for 1966 in Table 4.4, the revised constant-price figure might be 219–220 billion rubles, roughly equal to the calculated value in the tabulation above. The smaller deviation in 1964 remains unexplained.

73. Based on the percentage increases of Table 4.1, which provide an additional significant digit. Rounded, the implied index with 1958 = 100 is identical with the reported index in Table 4.2.

By the same procedure, we could compute the absolute values at 1958 prices of net output for each of the five branches distinguished in Table 4.2, using 1958 figures from Table 4.3. As there are no reported series of absolute values for branch net output, no checks of the kind made in the preceding paragraph can be attempted. However, one could simply compare the sum of the calculated branch values with reported total NMP as a consistency check. The results, in terms of deviations of the former from the latter, are shown in Table 4.11 (billion rubles).

Table 4.11. Deviations of the sum of calculated branch values from reported NMP

1952	+2.6	1962	+0.3
1953	+1.2	1963	−0.3
1959	—	1964	−0.1
1960	−0.1	1965	—
1961	—	1966	—[a]

—: zero or insignificant.

a. On the assumption that the 1966 official figure was 219–20 billion rubles.

The deviations in 1959–66 are small or nonexistent, those in 1952–53 large, especially as a proportion of the absolute NMP total (4 percent in 1952, 2 percent in 1953). Because values have not been reported for 1952–53, the sums of branch outputs are compared with the product of the reported 1958 NMP value and index numbers of NMP in 1952 and 1953. The relatively sizable discrepancies in 1952–53 may be due to data revisions between the publication of the sources from which the 1952–53 index numbers were drawn on the one hand, and the release of the 1958 values and 1959–67 indexes on the other. Paragraph 2 above indicates that data revisions did occur.

4. *Valuation of output; purchasers' or producers' prices?* Valuation in Table 4.3 is said to be at "actual prices of disposal" (*fakticheskie tseny realizatsii*), and hence that turnover tax realized through industrial goods prices is part of the value of industrial output. Whether this is also true of the index numbers of branch output has not been indicated, but an affirmative answer is suggested by the results of the consistency checks described in the preceding paragraphs.

The valuation basis is probably producers' prices plus turnover tax. If purchasers' prices were the basis, the transport-trade margin would be double-counted in gross industrial output. It is doubtful whether this is true: when turnover taxes are added to reported value of gross industrial output (1960–68) at wholesale-enterprise prices, the results closely approach the entries for 1960 and 1963 in Table 4.3; the differences for

1965–68 increase, reaching 8 billion rubles in 1968, but they do not exceed 2 percent of the figures in Table 4.3.[74]

5. *Credibility of reported growth and consistency of GSP and NMP.* These are the core questions of reliability. The analysis is confined to the period since 1958 for which the requisite data are available.

(A) In Table 4.1, annual relative increases in GSP are usually indistinguishable from those of NMP. In no case is the difference larger than two percentage points and there are only three such instances of two-point margins (1946, 1947, and 1958). The cumulative effect of whatever margins of difference exist is also small: the aggregate increase in NMP over the period 1940–68 is but 6 percent larger than the growth of GSP; the margin is 4 percent when the initial year is moved up to 1950.[75]

The distinction between GSP and NMP is the inclusion in the former and exclusion from the latter of most intermediate product plus depreciation on productive capital. Evidently, the structure of GSP by gross cost elements should not have changed over the course of four decades. Yet, in the short interval of seven years, the ratio of the replacement fund to net product in GSP, $c/(v + m)$, rose at current prices from 1.04 in 1959 to 1.17 in 1966. At current prices the share of NMP in GSP dropped from 48.9 percent in 1959 to 46.0 in 1966; at 1958 prices there was an increase from 49.4 to 49.8 percent.[76] By implication, the price level of materials and semimanufactures (plus depreciation) was rising relative to that of wages, profits, and taxes.

The same implication emerges from a comparison of the implicit deflation of NMP and GSP. Table 4.4 provides absolute values of total output, net and gross, at current and 1958 prices, reported in the sources or computed using official index numbers (figures in parenthesis). Implicit price deflators are computed from the current and constant-price series. The GSP deflator is not available for all years in the series, and we can only say that in the middle 1960's the implied average price level of total gross output is supposed to have been slightly higher than in 1958; in 1967–68 the implied price level rose 5 percent. NMP displays an

74. Output at current prices is taken from *Narkhoz 68*, p. 183, turnover taxes from ibid., p. 743, and Ministerstvo finansov SSSR, *Gosudarstvennyi biudzhet SSSR i biudzhety soiuznykh respublik* (Moscow, 1966), p. 10.

75. Comparable time series for FMP are not available, but according to Eidel'man, *Mezhotraslevoi balans*, pp. 302–3, rates of growth of FMP and NMP are also very close together. In 1960–62 annual relative increments of FMP exceeded those of NMP by 0.1 percent in 1960, 0.4 in 1961, and 0.7 in 1962. The margin was larger in 1963 only because amortization rates were raised that year. At pre-1963 rates, FMP was 27 percent higher in 1963 than in 1959; the corresponding figure for NMP was 26.5 percent. Eidel'man's figures (in conjunction with the official data on total consumption and accumulation, —Table 4.6) suggest that NMP is about 85 percent of FMP.

76. M. Eidel'man, *Voprosy ekonomiki*, 1969, no. 9, p. 82. Figures in this article differ slightly from those given in *Narkhoz 60*, p. 144, and *67*, p. 112.

entirely different price pattern: with an exception in 1962, the implicit price deflator declines continuously after 1958 and until 1967; overall the average price level of total net output is alleged to have decreased by 5 percent;[77] the increase in 1967–68 is barely perceptible. If these divergent movements are mutually consistent, the level of the implicit price deflator of intermediate output must have risen 7–8 percent in the middle sixties, compared with 1958.

We note indeed that prices paid to state farms and other agricultural producers (purchase prices) jumped 68 and 39 percent respectively between 1958 and 1966[78] while industrial wholesale prices rose 5 percent.[79] As industrial and agricultural purchases are the dominant component of interbranch transactions, we may average the indicated changes in industrial and agricultural prices[80] and estimate that they would have yielded an increase in the materials price level of 12 percent.

However, the price indexes cited here relate to output, whereas what are in fact required for the present purpose are indexes of input prices. Unfortunately, systematic data of this kind are lacking, and the available evidence, reviewed in the paragraphs below, is inconclusive.

(i) An index of prices *paid agricultural producers* is a poor proxy for a price index of *industrial purchases of agricultural materials*, because the sharp increases in the former were often absorbed by the state budget rather than passed along to processing plants. The subsidies disbursed by the budget to cover the gap between these divergent price levels are estimated to have run 1–3½ billion rubles in 1958–64, jumping to 5 and 7 billions in 1965–66.[81] If prices of agricultural inputs to industry did not increase by half but only by, say, one-tenth, the increase in industrial and agricultural prices is reduced from 12 to 6 percent.

(ii) The price paid by a state sector buyer for industrial goods is "industry" wholesale price, whose average level was 1 percent lower in

77. Of this, about 1½ percentage points can be ascribed to increases in amortization norms in 1963 (see note *a* to Table 4.4), so that the actual decrease in price level was only 4 percent.

78. See Table 4.9, above.

79. Table 4.9. The reference is to "enterprise" prices, net of turnover tax. "Industry" price, gross of tax, fluctuated in a very narrow margin.

80. Weighted by 1959 shares of intermediate purchases at producers' cost. In the first quadrant of the 1959 input-output table, as reconstructed by Vladimir Treml, in U.S. Congress, Joint Economic Committee, *New Directions in the Soviet Economy* (Washington, 1966), facing p. 269, industry and agriculture account for 71.5 and 14.5 percent respectively of the total including depreciation. Here flows are valued at purchasers' prices. Allowing for the double counting of the trade-transport margin reduces these figures only marginally, to 71.1 and 13.6 percent. The average increase in all agricultural prices is assumed to be 50 percent; industrial prices, as indicated, increased 4 percent.

81. Becker, *Soviet National Income 1958–1964*, p. 371; Sally Anderson, *Soviet National Income 1964–1966, in Established Prices*, RM-5705, (Santa Monica, Calif.: The RAND Corporation, Sept. 1968), p. 59.

1966 than in 1958, with small fluctuations between the two dates (Table 4.12). The index level is held down by a drop in the machinery and metalworking component,[82] whose output is largely destined for final demand. Moreover, there is good reason to suspect downward bias in the machinery price index, because of faulty handling of the new-product problem,[83] and perhaps in the indexes of several other industrial branches

Table 4.12. Wholesale price indexes of industrial and agricultural output, 1940, 1948–1968

	Industrial prices				*Agricultural prices*	
	"Enterprise"		*"Industry"*		*Purchase*	*State farm delivery*
	1949 = 100	*1959 = 100*	*1949 = 100*	*1959 = 100*	*1952 = 100*	*1958 = 100*
1940	..	..	47	77	..	..
1948	..	..	85	139	..	..
1949	..	..	100	164	..	..
1950	83	122	80	131	..	..
1951	..	..	..	..	..	..
1952	72	106	69	113	100	..
1953	..	..	..	..	154	..
1954	..	..	62	102	207	..
1955	68	100	61	100	209	..
1956	..	..	..	..	251	..
1957	67	99	60	98	266	..
1958	67	99	60	98	296	100
1959	68	100	61	100	300	108
1960	69	100.3	61	100.0	299	..
1961	69	101.6	60	98.3	304	117
1962	71	104.4	61	100.0	332	..
1963	71	104.4	61	100.0	355	129
1964	71	104.4	61	100.0	354	130
1965	70	102.9	60	98.4	404	156
1966	71	104.4	59	97	412	168
1967	77	113	64	105	..	..
1968	77	113	64	105	..	..

Sources

Industrial Prices. *Narkhoz 62*, pp. 144–45; *63*, pp. 136–37; *65*, pp. 166–67; *68*, pp. 224, 226; S. G. Stoliarov. *O tsenakh i tsenoobrazovanii v SSSR*, 3d ed. (Moscow, 1969), pp. 127–29.

Agricultural Prices. Stoliarov, pp. 121–22.

(e.g., chemicals) as well. It is reasonable to infer some increase in the average price level of industrial goods satisfying intermediate demand, but the increase may be small.

82. S. Stoliarov, *O tsenakh i tsenoobrazovanii v SSSR*, 3d ed. (Moscow, 1969), p. 129.

83. See Bornstein in this volume, Chapter 16; also Becker, *Soviet National Income 1958–1964*, pp. 517–20.

(iii) Prices paid by state and collective farms for automotive fuel and machinery parts were lowered on 1 February 1961. In the next year prices to collective farms of metal articles, timber, and construction materials were also decreased. Feed prices rose in 1963, but by 3 percent, only to be cut by 8 percent in 1965. A price index for all producers' goods supplied to agriculture, including machinery and equipment, with 1960 = 100, reads 81 in 1961, 78 in 1962–64, 77 in 1965, and 74 in 1966.[84] These decreases followed very substantial increases in late 1958 in prices of spare parts (as well as of machinery),[85] but clearly the average price of purchased material inputs was declining.

Since gross output in Soviet measurement should be sensitive to changes in economic organization, it is conceivable that the apparent increase in material intensity of GSP at current prices reflects little more than organizational fission or increases in subcontracting. However, the first factor would not resolve the inconsistency between the

Table 4.13. Ratio of net to gross output, by branch of the economy (percent)

	Industry	*Agriculture*	*Construction*	*Transportation communication*	*Other branches*	*Total output*
1958	41.7	58.4	47.1	58.3	85.6	49.2
1960	40.0	60.2	45.5	59.7	85.6	47.7
1963	38.9	59.2	43.8	62.0	84.7	46.3
1964	38.9	61.0	43.4	62.0	85.0	46.7
1965	38	62	45	61	84	46
1966	37	62	44	63	84	46
1967	36	63	42	62	83	45
1968	35	62	41	68	84	44

near-identity of GSP and NMP index increases and the rising material intensity of GSP, unless GSP at constant prices were measured on an unchanging organizational base. There is considerable evidence to the contrary;[86] moreover, increasing subcontracting could not be dealt with in the same manner.

(B) The relation between net and gross output at current prices can be studied by branch of the economy. It is possible to compute such ratios (see Table 4.13) for 8 of the 11 years covered in Table 4.3. Total output ratios are separately available for 1959 and 1966—48.9 and 46.0 percent,

84. Stoliarov, pp. 131–32.

85. Becker, *Soviet National Income 1958–1964*, p. 385.

86. E.g., Petrov, p. 196. For the empirical evidence, see Chapter 7 (Greenslade) in this volume. Eidel'man (n. 76 above) points to the increasing weight of material-intensive branches in aggregate intermediate output. But this again is at current prices.

respectively, released in connection with the publication of fragments of the input-output tables for these years.[87]

The tabulation indicates that the ratio of net to gross output declined appreciably in industry and construction but increased in agriculture and transportation-and-communication; hence, that at current prices output in the former pair of branches grew increasingly material intensive, whereas in the latter pair output became progressively more wage-and-profit intensive. On balance, the changes in industry and construction dominate, and total output is shown to be growing more material intensive at current prices.

Here, it is possible that increasing material intensiveness of industrial production represents only or even partly a greater degree of double counting. On the other hand, industrial output *net of double counting* may have been growing more rapidly than value-added, all at current prices. Earnings of industrial personnel rose 47 percent between 1960 and 1966, and "money accumulation" 32 percent;[88] therefore, value-added at current prices must have grown by roughly 40 percent. Greenslade's estimate of the increase in real net industrial production over the same period is 46 or 49 percent. Even if we took the official "industry" wholesale price index seriously—that is, assumed that industrial prices declined slightly on balance—the output change at current prices should have matched or exceeded the increase in current value-added. Rapidly rising agricultural incomes and prices on the one hand, declining input prices on the other, are also consistent with a finding of diminishing material intensiveness of agricultural output. Thus, increasing double counting in the current-price series cannot be ruled out, but it may not be as important a factor as is commonly believed.

(C) The pattern of change in the official wholesale price indexes seemingly contradicts the indicated drop in the average price of total net output. Weighting "industry" wholesale and agricultural prices by the shares of industry and agriculture in 1958 NMP (Table 4.3) yields a 16 percent increase by 1966 compared with 1958 in their average price level.[89] It is inconceivable that prices of construction, transportation-and-communication, and "other" branches declined by 65 percent, as they would have had to do if industrial-agricultural prices rose 16 percent but the price level of total net output declined 5 percent. If the NMP implicit deflator is still to be given a clean bill of health, it must be because gross prices are inadequate proxies for value-added per unit of output. Indeed,

87. Eidel'man (note 76 above).

88. *Narkhoz 67*, pp. 648, 657, 859. In 1967 wholesale prices were raised 7 or 8 percent; industrial earnings simultaneously moved up by 8 percent and "money accumulation" by 15 percent.

89. Agricultural purchasing and delivery prices are averaged in the proportions 75:25, based on the sectoral structure of marketed output in 1958 (*Narkhoz 64*, p. 254), crudely adjusted for marketings other than procurements.

earnings of productive labor (v) increased only 2 percent more than employment between 1959 and 1966, from which one may assume a gain in overall labor productivity. On the other hand, the money rate of growth of surplus product (m) of over 6 percent per year probably at least equaled or even exceeded that of aggregate real net output in the same interval.[90] Thus, a factor making for a decline in the NMP implicit price deflator may be offset by one making for an increase in the deflator.

The implication of my attempts elsewhere to reconstruct various official series (described below) is also to cast some doubt on the reliability of the NMP deflator. The latter may understate the actual rise in investment costs, particularly of equipment and machinery. Again, the new product problem is a major factor.

(D) The implicit price changes of NMP can also be broken down into the component deflators of the five branches for which net output data are provided in official sources; see Table 4.14.[91]

Table 4.14. Ratios of current-price to constant-price value of net output (1958 = 100)

	Industry	*Agriculture*	*Construction*	*Transportation communication*	*Other branches*	*Total output*
1959	100.8	95.7	97.0	95.6	92.0	99.2
1960	99.2	94.3	98.0	98.7	100.0	98.1
1961	94.5	100.0	100.0	102.4	96.2	96.8
1962	93.8	114.2	98.9	95.8	95.8	98.4
1963	91.3	119.3	96.8	97.9	96.3	97.3
1964	90.5	117.5	95.2	97.2	94.6	95.5
1965	84.8	129.8	100.0	100.0	94.1	95.3
1966	81.1	137.8	100.5	99.2	93.8	94.6
1967	81.3	137.8	100.5	97.8	95.3	94.5

90. Values of v and m in 1959 and 1966 can be established as follows:

	Billion rubles		*Percent*
	1959	*1966*	*increase*
v	72.2	108.7	51
m	64.0	98.7	54

Source: The cost structure of GSP—Eidel'man (as in note 76 above), p. 86—and NMP values—Table 4.3. The number of workers and employees in the productive sector increased 35 percent. *Narkhoz 62*, pp. 452–54, and *67*, pp. 648–49: all branches total less employment in housing, health, education, science, credit, and administration. The difference still includes some employment in nonproductive sectors—e.g., passenger transportation—but the error is probably not significant for present purposes. Allowing for the decline in collective farm employment might reduce the figure to 30 percent.—A 54 percent increase of m in seven years amounts to an average annual rate of growth of 6.4 percent. The Soviet claim for real net output is a growth of 60 percent over the whole period, or 6.9 percent per year; Western estimates would probably be lower; cf. Chapter 5 in this volume (Cohn).

91. Computed from Tables 4.2 and 4.3. The differences between figures in the last column of Table 4.14 and those in the last column of Table 4.4 are minor and due to rounding.

From 1960 to 1966, indexes of unit value-added declined continuously in industry and rose sharply in agriculture. The indexes for construction and transportation-and-communication fluctuated; that for "other branches" dropped by about 5 points. Thus, the implicit deflator of net agricultural output behaves very much like the gross price index; on the other hand, the deflator of net industrial output drops abruptly, far more than the wholesale index of prices gross of turnover tax. For the remaining branches we do not possess sufficient organized price information. In any case, accounting for three-quarters of NMP in 1958, industry and agriculture are clearly the critical branches. With respect to industry it has been shown that the price of net output, value-added per unit, could have declined between 1960 and 1966. However, it does seem doubtful that the drop was anywhere near as great as indicated in Table 4.14.

(E) If the change in the NMP deflator is to be judged against movements of the branch net output deflators, the implicit assumption is that the set is mutually consistent. A test of that assumption in effect amounts to a test of whether the quantity indexes of Table 4.2 are base-year weighted. That is, each implicit deflator is a price index with given year weights:

$$\frac{\frac{\Sigma P_1 Q_1}{\Sigma P_0 Q_0}}{\frac{\Sigma P_0 Q_1}{\Sigma P_0 Q_0}} = \frac{\Sigma P_1 Q_1}{\Sigma P_0 Q_1}$$

The test involves multiplication of the reciprocals of the branch ratios—ratios of constant-price to current-price values—by branch shares in the given year (Table 4.3). When the products for each branch i of the five branches,

$$\frac{(\Sigma P_0 Q_1)_i}{(\Sigma P_1 Q_1)_i} \cdot \frac{(\Sigma P_1 Q_1)_i}{\sum_{i=1}^{5} (\Sigma P_1 Q_1)_i}$$

are summed, the result is the total NMP ratio of constant-price to current-price values, if the quantity indexes are constructed with base-year weights.

When the calculations are performed, it is found that the sum of the products deviates from the total NMP ratio by at most two-tenths of a percentage point in the period 1959–65. Depending on which figure is chosen as the constant-price total in 1966–67, the divergences range from zero to four-tenths of a point. The discrepancies turned up can be ascribed to rounding errors or the use of an inappropriate constant-price total in

1966–67. It seems reasonable to infer that the indexes of Table 4.2 do indeed employ 1958 weights.

(F) The various considerations may be summarized as follows:

(i) Official data for GSP and NMP at current and constant prices imply a rise in materials prices in the first half of the sixties that is substantial relative to changes in other aggregate price indexes. Collateral information is inadequate to say more than that an increase was possible and that its magnitude could not have been larger than the official data imply.

(ii) At current prices, the official data reveal a pattern of rising material intensiveness for industrial output and the converse for agricultural production. Increased double counting may be a factor partly explaining the industrial changes, but it is conceivable that industrial output net of double counting grew faster than value-added, at current prices.

(iii) The implicit price deflator of NMP may be downward biased, perhaps because of understatement of investment cost inflation.

(iv) The implicit decline in the average price of net industrial output also seems exaggerated, perhaps for a similar reason.

6. *Dollar-ruble ratios and NMP deflators.* Although the material is not of direct interest in the present connection, official comparisons of U.S. and USSR national output (Table 4.5) also carry an implication with respect to Soviet price changes. I cannot quite replicate the aggregate Soviet NMP figures in the first column of Table 4.5 by multiplying together the ruble NMP figures in column 3 of Table 4.4 and the official exchange rate, but the differences uncovered are small. More interesting are the implicit average purchasing-power parities of the ruble as estimated by TsSU. Computed from NMP values in Tables 4.3 and 4.5, the value of the ruble changes as follows:

1962	$1.20	1965	$1.28
1963	$1.24	1967	$1.30
1964	$1.28	1968	$1.34

Two observations are noteworthy: (i) the estimated purchasing-power parities are remarkably close to the official rate of $1.11; (ii) the value of the ruble appears to have increased by 12 percent between 1962 and 1968. Morris Bornstein's calculations implied that for GNP, the (new post-1960) ruble was worth $1.65 in 1955.[92] But the TsSU comparison in Table 4.5 relates to NMP, for which the dollar-ruble ratio should be

92. M. Bornstein, "A Comparison of Soviet and United States National Product," in Joint Economic Committee, U.S. Congress, *Comparisons of the United States and Soviet Economies* (Washington, 1959) 2:385; also idem, "Reform and Revaluation of the Ruble," *American Economic Review* 51, no. 1 (March 1961): 121.

lower, since the omitted services have higher price ratios. Given U.S. and Soviet price trends, the corresponding figures for the 1960's would be higher. Thus, the implicit deflator of U.S. GNP rose 16 percent between 1955 and 1962 and an additional 16 percent in the succeeding six years.[93] On the other hand, in the United States price movements in services have tended to be steeper than in other components of output. In the same subperiods—1955–62, 1962–68—the service deflator increased 23 and 21 percent, respectively. The U.S. deflator for goods alone (including structures) was 12 percent higher in 1968 than in 1962,[94] whereas the average price level of Soviet NMP is indicated to have declined 4 percent in the same interval. The combination is not far off the indicated 12 percent increase in the purchasing power of the ruble for NMP. In brief, Table 4.5 is consistent with Table 4.4. Of course, there is no implication here with respect to the accuracy of the claimed decline in the NMP implicit price deflator.

7. *Revisions of NMP by use.* The figures presented in Table 4.6 are the latest available. For the years 1959–65 preliminary data can be compared with revised figures, as in Table 4.15. It will be seen that the intervening changes are on occasion proportionally sizable. No information on the basis for the revisions has been released, and speculation on the reasons does not seem fruitful at this point.

8. *Consistency of index numbers and current values of utilized NMP.* Recently, TsSU has begun to issue an index of NMP "used for consumption and accumulation." For the moment, it is assumed that this is utilized NMP, as defined earlier. Table 4.8 compares index numbers and annual percent increases of produced and utilized NMP in the period for which utilized NMP data are available—since 1958. Over the relatively short span of eleven years the overall increment of NMP produced is claimed to be 6 percent larger than that of utilized NMP. It will be recalled that the margin between GSP and produced NMP also was 6 percent, but over twenty-eight years. Annual increments of utilized NMP are never larger than those of produced NMP; they were at the same level in four of the eleven years, smaller in another four, and either smaller or the same in the remaining two.

If we compare the index changes in Table 4.8 with the increases in total produced and utilized NMP at current prices in Table 4.6, an interesting result emerges. The margin between produced and utilized income rose 4.4 times at current prices and 18 times at constant prices. By implication, the price level of the margin between produced and utilized NMP declined by a factor of 4!

93. *Economic Report of the President*, Feb. 1970, (Washington, 1970), p. 180.
94. Ibid., pp. 182–83.

Table 4.15. Revisions in estimates of NMP by final use at current prices, 1959–65 (billion rubles)

	Consumption				*Accumulation and other expenditure*							
		Material outlays in			*Increment of fixed capital*			*Increment of material working capital and reserves*				
	Personal consumption (1)	*Organizations servicing households* (2)	*Science and administration* (3)	*Total* (4)	*Productive* (5)	*Nonproductive* (6)	*Total* (7)	(8)	*Total* (9)	*Total utilized NMP* (10)	*Capital losses and undistributed expenditure* (11)	*Total NMP produced* (12)
1959 A	88.0	6.8	2.4	97.2	13.6	8.9	22.5	13.6	36.1	133.3	3.1	136.4
B	88.0	7.2	2.1	97.3	13.7	9.1	22.8	12.8	35.6	132.9	3.3	136.2
1960 A	93.7	7.4	2.8	103.9	16.3	10.0	26.3	13.5	39.8	143.7	2.9	146.6
B	93.9	8.2	2.4	104.5	15.7	9.6	25.3	12.9	38.2	142.7	2.3	145.0
1961 A	96.9	8.9	2.7	108.5	16.2	9.2	25.4	17.3	42.7	151.2	1.7	152.9
B	96.7	8.7	2.7	108.1	15.6	9.7	25.3	17.6	42.9	151.0	1.9	152.9
1962 A	104.5	9.5	3.0	117.0	20.1	9.3	29.4	16.5	45.9	162.9	2.2	165.1
B	105.0	9.5	3.0	117.5	18.2	10.2	28.4	16.6	45.0	162.5	2.1	164.6
1963 A	110.3	10.4	3.4	124.1	17.5	10.8	28.3	14.2	42.5	166.6	2.5	169.1
B	110.3	10.4	3.4	124.1	17.4	10.8	28.2	14.1	42.3	166.4	2.4	168.8
1964 A	115.2	11.2	3.6	130.0	19.2	10.2	29.4	20.6	50.0	180.0	1.5	181.5
B	115.5	11.1	3.8	130.4	19.2	9.7	28.9	20.4	49.3	179.7	1.6	181.3
1965 A	123.9	12.4	4.4	140.7	19.0	9.9	28.9	20.8	49.7	190.4	2.2	192.6
B	124.9	11.2	4.2	140.3	17.5	10.4	27.9	22.3	50.2	190.5	3.0	193.5

Sources

*1959*A. *Narkhoz 60*, p. 154 and Eidel'man, *Voprosy ekonomiki*, 1961, no. 10, p. 67. *1960*A. *Narkhoz 60*, p. 154. *1961*A. *Narkhoz 61*, p. 599. *1962*A. *Narkhoz 62*, pp. 483–84. *1963*A. *Narkhoz 63*, p. 503. *1964*A. *Narkhoz 64*, p. 578. *1965*A. *Narkhoz 65*, p. 592.

For B entries, see corresponding rows in Table 4.6.

The explanation of this anomaly can be sought in two possible directions. First, in differences of price weights and commodity structure, as between an index of value-added and one of components of final use. This is the official explanation.[95] An alternative hypothesis is considerably more speculative. In an unpublished working note, Treml has raised the possibility that defense is excluded from NMP by use and that the lag of the index of utilized NMP behind that of produced NMP is explained by the exclusion of defense from the former. The argument relevant to the problem at hand may be elaborated as follows.

It can be easily seen that the indexes of Table 4.8 are not merely reflections of the current price totals in Table 4.6. Conceivably, either or both of the indexes of Table 4.8 is (are) related to current-price values different from that (those) of Table 4.6. If this is true of both indexes in Table 4.8, there is little point in further speculation on the differences in coverage. Suppose, however, that the index of produced NMP is derived by deflation of the relevant series in Table 4.6, whereas the index of utilized NMP is related to an entirely different current-price series. It seems difficult to believe that capital losses and merchandise trade should display radically different price behavior than true utilized NMP. Hence, a possible explanation of the gap between the indexes of Table 4.8 may be that a relatively faster-growing component has been deducted in computing an index of utilized NMP. Possibly that component is defense,[96] and the procedure was adopted in order to abstract from defense's impact on the rate of growth. But, as indicated, the hypothesis is speculative.

As we have already found grounds to suspect an upward bias in the index of produced NMP, the discrepancy between the indexes of produced and utilized NMP could be ascribed to the same factor. However, it is difficult to imagine why the upward bias should be absent from the index of utilized NMP or more prominent in that of produced NMP.

Results of Reliability Tests

1. A number of minor consistency checks reveal no significant contradictions: the NMP index and reported values of NMP at constant prices; branch net-output indexes and total NMP values (paragraph 3); net-output indexes with corresponding implicit deflators (5D and E).

2. The indexes of produced and utilized NMP may diverge because of differences in price weights and commodity structure. Possibly, however, the index of utilized NMP may not be obtained by deflation of the series

95. *Narkhoz 65*, p. 814, and *67*, p. 920.

96. Is this the identity of "unaccounted" (*neuchityvaemye*) expenditures which Petrov, p. 426, declares is part of the difference between produced and utilized income, along with losses and the material trade balance?

at current prices; the coverage of the former may be narrower than that of the latter.

3. On the major tests of consistency of GSP and NMP data, in total and by branch component, in paragraph 5, no firm conclusions can be drawn, but the results justify withholding full confidence in the reliability of the growth indicated by the official data. There are apparent inconsistencies between total-output indexes, ratios of NMP to GSP at current prices, and several price indexes, particularly the implicit NMP deflator. The decline in the average price level of NMP seems dubious.[97]

Aside from internal-consistency tests, the reliability of the Soviet data can be assessed on the basis of comparisons with independently constructed national-product series. The comparisons may relate to absolute levels for specific years or to rates of growth over given intervals. Both of these categories of tests have been performed and reported in the Western literature.

To begin with absolute-level comparisons, I have elsewhere attempted a reconciliation of an independently estimated series of net national product at established prices with NMP for the years 1958–64.[98] The reconciliation involved (i) deduction from NNP of nonmaterial services and capital consumption allowances not subtracted from NNP and (ii) the addition of depreciation on nonproductive capital, as well as an adjustment for the difference between valuing farm income in kind at average prices realized in all sales (NNP) and at average prices realized in sales by collective farms and households (NMP). The result, computed NMP, was compared with official reported value of produced NMP. Deviations were relatively small, the largest involving a shortfall in the computed value of less than 2 percent of the reported value in 1961 and 1962. Comparison of annual increments in the computed and reported series shows greater swings, although for the period as a whole the average annual increments in the two series are identical.

The official data on NMP by final use (Table 4.6) indicate a slight decline over time in the relative weight of personal consumption, but it has tended to be offset by increase in the share of institutional consumption. Thus, there appears to have been considerable minor fluctuation, but little overall change, in the relation between consumption and accumulation. On the other hand, net fixed investment was clearly rising as a claim on output until the early 1960's and dropped off thereafter. Fluctuations in the share of inventory and reserve investment are the most extensive of any NMP category. With due account for the differences in scope and

97. See Vainshtein, pp. 133–37, who comes to the same conclusion although not on the best evidence. Vainshtein also suggests that the official retail price index is biased downward and may even misstate the direction of change.

98. Becker, *Soviet National Income 1958–1964*, pp. 34–37.

coverage, these patterns do not appear radically different from those of GNP, as estimated by Bergson and myself.[99]

I have also attempted to reconstruct the official figures for net fixed investment at current prices in 1958–64, starting from yearbook data on gross new capital increments (*vvod v deistvie osnovnykh fondov*), adding capital repairs and deducting capital consumption allowances (depreciation, cumulated underamortization,[100] and accidental loss or damage to fixed capital).[101] Deviations of computed from reported values were within 3 percent of the reported value in five of the seven years, 5 percent in one year, and 16 percent in another. Owing to a variety of information gaps with respect to the building blocks of the calculated series, it was not to be expected that the official series could be precisely replicated; hence the reconstruction may not be a suitable test of the reliability of the official data.

In Chapter 5 of this volume, Cohn devotes considerable attention to comparison of growth rates in the official series with the Western-calculated series, so I may be brief here. At the aggregate level, comparison of the official figures for produced and utilized NMP on the one hand, and several Western calculations—by Cohn, Moorsteen-Powell, and myself—on the other, indicated that the overall growth shown by the official series in the period 1958–64 was roughly 1–1½ percentage points higher than the Cohn and Moorsteen-Powell calculations. The official growth rates exceeded those of my estimates of GNP by ½–1 percentage point and that of my reconstruction of NMP by a point.[102] For a slightly shorter period, 1959–63, the growth rate of consumption computed from the official data reported in *Narkhoz 64* is essentially the same as that of my estimates adjusted to fit the Soviet series and is roughly a percentage point higher than that of a similar series estimated by David Bronson and Barbara Severin.[103]

Official data for NMP at current and constant prices imply an almost continuously declining average NMP price level between 1958 and 1964. For my estimated reconstruction of NMP the implicit price deflator rises after 1961 and on balance shows a slight average price increase. On the other hand, there is no observable difference between the respective implicit price deflators for consumption.[104]

99. Bergson, *The Real National Income of Soviet Russia Since 1928*, p. 245, and Becker, *Soviet National Income 1958–1964*, pp. 264–67.

100. That is, residual book values of assets retired, net of scrap value.

101. Becker, *Soviet National Income 1958–1964*, pp. 168–69.

102. Ibid., pp. 234–35.

103. Ibid., p. 223.

104. Ibid., pp. 239, 227. However, both the official and my implicit price deflators of NMP may understate the true increase because they may understate the true growth of investment costs, particularly of equipment and machinery. Ibid., pp. 516–21; also Ia. Kvasha and V. Krasovskii, *Voprosy ekonomiki*, 1968, no. 4, pp. 76–77.

The preceding discussion of the reliability of Soviet data has touched on only some of the outstanding questions. In particular, I have not dealt with the problem of double counting in agriculture, and only indirectly with the same issue for industry. For the limited kinds of tests performed here, one must conclude that, on balance, reservations on the reliability of the official national income data are not as serious as they were twenty years ago.[105] Nevertheless, incomplete information (e.g., only fragmentary data on incomes, aggregation of output by branch and by type of use) and Soviet secrecy prevent resolution of remaining doubts.

3. Prospects

The Marxist mode of accounting requires setting boundaries between productive and nonproductive labor, between material product and services.[106] But elements of arbitrariness inevitably adhere to any concrete statistical procedure, and these distinctions are particularly subject to them, as we have seen. A demarcation long subject to criticism in the Soviet literature is that between freight and passenger transport. "Continuation of the process of industrial and agricultural production" is the justification for the admission into the productive sphere of freight transportation, as well as of communication serving production and the services of trade in its various forms. Apart from the fact that Marx defined transport as material product, "irrespective of whether goods or people were being transported," one could make the argument that a good part of passenger transportation was necessary to production, because "a person can only then participate in production if he is brought to the place of work." By extension, transportation of workers to vacation spots should also be included, because the "rest [is] necessary for the restoration of the person's work capacity."[107] Yet if the trip is not paid on account of a factory *putevka* but by the individual, and the destination is not a sanatorium but only *babushka*'s village, the link to production is presumably broken.[108]

105. With the possible exception of such episodes as the successive escalation of the percentage increase in NMP during 1964. Becker, *Soviet National Income 1958–1964*, p. 5.

106. It has been argued that Soviet statisticians have misunderstood or misapplied Marx's views in this area. See V. Holesovsky, "Karl Marx and Soviet National Income Theory," *American Economic Review* 51, no. 3 (June 1961): 325–44; also Kaser, "A Survey of the National Accounts of Eastern Europe," pp. 143–44. Cf. Vainshtein, p. 13: "The TsSU of the USSR in its understanding and therefore calculation of national income interprets the relevant statements of K. Marx too dogmatically and rigorously."

107. N. Savin, *Vestnik statistiki*, 1969, no. 2, pp. 68–69.

108. On this issue Poland, Hungary, the GDR, and CEMA as a whole depart from Soviet custom by including passenger transport and communications serving households in material output. Yugoslavia follows the same rule. Only Czechoslovakia, Bulgaria, and Rumania adhere to the USSR practice. E. Kudrova, *Statistika natsional'nogo dokhoda sotsialisticheskikh stran* (Moscow, 1969), pp. 7, 20.

The rationalization of links to production can be extended almost indefinitely. If freight transport and trade continue the production process, surely applied research precedes it. Yet, most labor engaged in research is relegated to the nonproductive sphere. Under the existing institutional arrangements, production would be severely disorganized if the banking and financial systems were suddenly removed. Yet, only payments of interest by productive enterprises are entered as production incomes (in public-sector value-added), and only the materials consumed by banks and related institutions appear as a use of output (in nonproductive consumption). If suburban transportation to and from work should be included in full in the national income, why not the services of baths[109] or clinics, which also contribute to the worker's effective participation in production?

These dividing lines have proved mutable. Cleaning and dyeing establishments were once in the service sector; now they are part of industry.[110] Material production now embraces a part of research—those organizations attached to production enterprises, such as factory laboratories, design bureaus, design and project organizations, except those attached to scientific research institutions, various experimental and selection stations, and the like. There is still a great deal of the research system outside the boundary of production—scientific research institutes, geological prospecting, etc. But the line may not long stay in place:

> It seems to us that it is in order to raise the question of widening the list of scientific organizations included in the sphere of material production. In particular, this can relate to branch scientific research organizations as well as geological-prospecting organizations carrying out prospecting operations and meteorological stations. It is necessary to consider the degree of participation of science in the creation and improvement of the society's production forces.[111]

Since research is one of the more rapidly growing activities in the Soviet economy, inclusion in national income would have a stimulating effect on rates of growth. This would not be the result of complete incorporation of various consumer services—the so-called "everyday services" (*bytovoe obsluzhivanie* or *sluzhba byta*). A considerable part of these services, and the fastest-growing portion, are already deemed pro-

109. Such was in fact CEMA's recommendation. Kaser, "A Survey of the National Accounts of Eastern Europe," p. 144.

110. Vainshtein, p. 14, n. 6; also Kudrova, pp. 29–30.

111. Gur'ev, pp. 25–26. The quotation is from p. 26. For an opposing view of both science and passenger transport, see P. Moskvin, *Vestnik statistiki*, 1969, no. 6, pp. 44–45. Some of these revisionary views have been advanced before, without significant impact. See Nove, p. 248; also Ia. Kvasha, "O granitsakh material'nogo proizvodstva," Akademiia nauk SSSR, *Uchenye zapiski po statistike* (Moscow 1961), 6:141–56.

ductive.[112] Nevertheless, there is considerable agitation in the Soviet literature for the unification of all consumer service activities in one independent branch of the production sphere,[113] perhaps in order to provide a more effective statistical vehicle for lobbying the consumer interest.

The nature of the relation between statistics and economic policy is, of course, an important issue in thinking about developments in national accounting. Do accounting concepts affect decisions on resource allocation? Did the exclusion of services from measured product hinder their development, and conversely, would the broadening of the production concept tend to speed up the growth of services?[114] Or is it because of the past rapid growth of science and various consumer services that there is now a temptation to include them in the measurement of economic progress?[115]

Decisions on some of the current classification controversies will be regulated as in the past by statistical convenience. However, changing needs and perceptions of the economic process are bound to affect accounting concepts too, even if only gradually: "The boundaries of material production are not determined once and for all; they change constantly with the deepening of the social division of labor."[116] Material product Soviet-style may be a measure appropriate to earlier stages of development; certainly its relevance was heightened by Stalinist priorities for steel, coal, and machinery. At a more advanced stage of development, when a smaller share of the nation's activity is encompassed by material product, the utility of the concept is diminished. It may even become a hindrance, as its use obscures fundamental economic relations —e.g., the burden of defense. Is it not the major purpose of national economic accounting to point up the "basic features, the central, pivotal links of social production"?[117]

The conflict between ideological purity and evolving analytic needs has led some East European economists to suggest new economic indicators, both partial and "global" income measures, encompassing both material product and services. Reporting these suggestions, a Soviet writer heatedly denies that they mark an intention to expand the boundaries of material product: "There is no repudiation here of the Marxist conception or of any compromise with the bourgeois conception. . . . The Marxist definition of national income as an objectively existing category

112. See the text associated with nn. 13–15 above.
113. Gur'ev, p. 26.
114. This is the view of Kvasha and Krasovskii, p. 72.
115. Only recently have money flows in services been articulated in the national balances. See the last paragraph of this chapter.
116. Plyshevskii and Iaremenko, p. 8.
117. I. Malyshev, *Vestnik statistiki*, 1967, no. 4, p. 11.

of a strictly material character is not subject to replacement."[118] Perhaps there will be additional indicators entering the statistical apparatus, but it seems likely that as long as NMP continues to be displayed as a general welfare and production index, there will be pressure to incorporate some of the fast-growing service series. By their nature, the added indicators are likely to be too partial to satisfy the needs of public relations.

In their continuing review of what are the basic features of the economic process, Soviet statisticians may be led to reexamine the utility of a number of traditional concepts—among them, the division I and II, group A and B classifications of product. One suspects that there is already a practical distinction between concepts relevant to an analytical apparatus linked to the past and those effectively in use for planning. (Has any plan ever been drawn up beginning with a decision on the value of I $(v + m)$/IIc?) Since the usefulness of tailoring analysis to plan model is evident, it may be that the gap between them will diminish.

On the other hand, the debate on the relative utility of another holdover concept, "gross-gross" output, may wane. The debate has been conducted partly as an attack on the proposed adoption of final product as *the* gross output indicator and as the starting point of planning models,[119] so diminished controversy must mean an accommodation between partisans of the two aggregates. As an enterprise success indicator, value of gross output has long since lost the bulk of its support, but it has received a fresh rationale in the context of input-output models. In that framework, both GSP and FMP have definite roles to fulfill.

"Gross-gross" output measures are necessary accounting tools in planning with input-output models. But the latter are most meaningfully employed when the economic classification is one of commodities ("pure" branches) rather than of existing enterprises or aggregations thereof. The task of recasting the economic information system has allegedly been high on the policy agenda for almost a decade, but it is difficult to see signs of major changes introduced. In part the explanation may be a classical problem of Soviet organization—the conflict between the desire for more information and the costs, in terms of increasing bureaucratic rigidities, of procuring the increased flow. For example, after Stalin's death the number of entities distinguished in the economic classification was reduced in an effort to ease the data burden in planning. With the increased interest in input-output and interbranch transactions there was a plea for more information.[120]

118. Kudrova, p. 27.

119. See the Treml and Becker papers in Hardt et al., *Mathematics and Computers in Soviet Economic Planning*, pp. 90–92, 103–6, 124–28.

120. Eidel'man, *Mezhotraslevoi balans*, pp. 16–17. In making up the Seven Year Plan, gross industrial output was broken down by 16 branches in the central apparatus; for the 1964–65 plan output was calculated in USSR and republic Gosplans for 57 branches. Efimov and Berri, *Metody*, p. 91.

This conflict reflects a classic dilemma in Soviet organization, that of the appropriate degree of centralization or decentralization of decision-making. A perennial corollary issue has been how to design the information system correspondingly. The problem may be more acute now, as has often been observed, because the flow of paper has become a flood, because the economy has grown more complex. Possibly, it is even more difficult now to arrive at a stable resolution, as some of the liberalizing alternatives look distinctly unpalatable to the conservative leadership.

The information dilemma is clear. If the information system is designed to assure plan fulfillment by signaling deviations to central observers empowered to correct the deviations by command, the accounting framework must be dovetailed with that of plan execution. As Soviet economic history has shown, such an arrangement conflicts with requirements of rational resource allocation. So long as the central apparatus retains its reluctance to delegate its resource-allocation responsibilities on a significant scale, the increasing theoretical sophistication of its planners will tend to be dissipated in the search for a compatible dual-purpose information flow system. Perhaps this helps explain the extended delay in the creation of the long-heralded network of computer centers, as well as the long intervals between major *ex post* input-output studies.

Along the way, it is apparent to most Soviet thinkers that the economy must move in the direction of decentralization and greater use of meaningful prices as guides to decisionmaking. A small step was taken in the latter direction by the price reform of 1967; there will undoubtedly continue to be agitation for taking even larger steps. Simultaneously, there are shifts in the degree to which money-price relationships are reflected in the national balances. A recent innovation in this regard is the accounting of incomes and outlays of the service branches. More attention is to be paid to the relations between the financial-credit system and household incomes and outlays.[121] Additional changes in the balances are being urged—from marginal improvements, like a separate balance of money incomes and outlays of economic organizations,[122] to major reconstruction, like the presentation of a complete, integrated set of accounts in block matrix form.[123] One would expect to see changes in Soviet national accounting concentrated in the former category, at least in the near term.

121. L. T., *Vestnik statistiki,* 1967, no. 2, p. 86.
122. Malyshev, *Vestnik statistiki,* 1967, no. 4, p. 18.
123. V. Isaev, *Ekonomika i matematicheskie metody,* 1969, no. 3, pp. 340–52.

5

Stanley H. Cohn

National Income Growth Statistics

Technical Deficiencies and Relevance of Soviet National Income Growth Statistics

Of all official Soviet economic statistics, none have been so completely rejected and reconstituted by Western scholars as have national income accounts and growth statistics. This disdain for official national income statistics stems from their lack of validity in what Western economists assert is the function of such data—a comprehensive portrayal of the economy's income flows and expenditures. The major deficiencies of the official magnitudes have been their limited coverage, largely excluding the service-producing sectors, and their inconsistent valuations, with the gap between accounting prices and scarcity prices varying widely with different types of transactions. To a lesser extent, Western scholars have also been concerned with the reliability of official data, particularly in the earlier Plan years when reporting procedures were still quite rudimentary.

Underlying Western criticism of Soviet concepts and methodology has been a very different view of the utility of national income statistics than that shared by Soviet economists and planners. During the long period in which Soviet leaders and planners concentrated on micro-economic planning or suboptimization of the system, the important statistical magnitudes were those physical-production or industrial-sector output targets which related to their priority interests. The macro-economic concern of national account statistics was outside their area of primary interest. In the prewar years national income data were little more than an afterthought; in the postwar period they have served to satisfy reporting requirements levied by international agencies.

Technical discussion of the changing nature of Soviet national income growth statistics deficiencies has usually been conducted from the viewpoint of a Western scholar who reconstructs Soviet data so as to enable him to make them serve his own analytical interests. The utility of such reconstructed magnitudes is not questioned, but assumed to be that for a Western analyst interested in an integrated picture of Soviet economic performance. Therefore, he concentrates on the validity of official statis-

tics, taking Western estimates as the standard. In effect, the Western specialist does not completely reject official estimates, but takes them as a base upon which to build a more valid structure.

Continuing Scholarly Concern with Validity of Soviet National Income Growth Statistics

Since the immediate postwar period Western scholars and specialists have been concerned with the validity of official Soviet national income growth statistics. The first comprehensive evaluation took place in 1947 in a panel discussion in the *Review of Economics and Statistics*, in articles by Colin Clark, Abram Bergson, Paul Baran, A. Yugow, and Alexander Gershenkron.[1] For the most part the authors concentrated on the deficiencies of the industrial-production index component of national income (Gershenkron) and presented their own alternative estimates of GNP growth rates (Clark), reconstructed Soviet national income estimates according to Western standards (Baran), examined the inconsistencies of wage and employment estimates (Bergson), and evaluated the quality of statistical reporting and compilation (Yugow). The only conceptual deficiency in the official national income index which was appraised was that of new products.

In two articles appearing in *Soviet Studies* in the mid-fifties Alec Nove discussed the implications of the Marxist concept of national income, evaluated the impact of the turnover tax on the national income growth index and delineated some of the particular measurement problems in the component originating sectors.[2] He also considered the significance of the prolonged use of 1926/27 prices and analyzed the problem of inclusion of new products in periods of rapid structural change.

In the capstone to his monumental study of trends in Soviet national product Abram Bergson devotes some space to evaluation of the official index of national income.[3] He presents some hypotheses as to the effects of alternative deflation procedures. In his discussion of the problem of pricing new products he concludes that the upward bias it exerts is considerably less than that claimed by other Western analysts.

All of the foregoing studies focused on the period in which divergence between official and Western-computed indexes of Soviet GNP growth

1. Seymour Harris, ed., "Appraisals of Russian Economic Statistics," *Review of Economics and Statistics* 29, no. 4 (Nov. 1947): 213–46.

2. Alec Nove, "Some Notes on Soviet National Income Statistics," *Soviet Studies* 6, no. 3 (Jan. 1955): 247–80. Also "1926/27 and All That", *Soviet Studies* 9, no. 2 (Oct. 1957):117–30.

3. Abram Bergson, *The Real National Income of Soviet Russia Since 1928* (Cambridge: Harvard Univ. Press, 1961), pp. 178–94.

was very large. Both Bergson and Nove alluded to the narrowed spread after 1950, but wrote at too early a time to be able to review the postwar period in sufficient perspective. This chapter will concentrate on the period since 1950 and appraise the validity of official national income growth statistics in an environment in which there has been an apparent improvement in official statistical methodology. After comparing official with Western-computed growth rates for various periods and noting the principal features of the official index, the deficiencies in official concepts and methodology will be listed. Statistical tests will then be made to determine the degree to which differences between the two sets of estimates can be explained by these deficiencies.

Divergence Between Official and Western-Computed Indexes

The assessment of the reliability of official Soviet indexes of national product must be based on some criterion. The standard by which the official indexes are judged is the growth indexes calculated by Western scholars who have followed national accounting and indexing procedures used in Western countries. For the most part the procedures adopted are those employed by the U.S. Department of Commerce or the Organization for Economic Cooperation and Development (OECD).

For the prewar period (1928–40) the best known index is that of Abram Bergson just cited, based on the deflation of the major product expenditure categories. Since my concern in this study is the comparison of official and Western-computed indexes, for the prewar period I will use as the Western standard the index of Norman Kaplan,[4] which has been computed like the official index, as the deflation of weighted originating-sector indexes. For the postwar period (1950–66) I will use my own calculations,[5] which are also based on deflation of weighted originating-sector indexes.[6]

Official and Western calculations of annual average rates of growth of Soviet GNP are compared in Table 5.1. The degree of divergence, which was very wide in the prewar period, has been progressively narrowing in the postwar years. This convergence would be even more apparent if individual years were compared since 1960. How can the higher official

4. Norman Kaplan, "The Retardation in Soviet Growth," *Review of Economics and Statistics*, 50, no. 3 (Aug. 1968): 293–303.

5. Stanley Cohn, "Soviet Growth Retardation: Trends in Resource Availability and Efficiency," in U.S., Congress, Joint Economic Committee, *New Directions in the Soviet Economy* (Washington, 1966), pt. II-A, p. 128.

6. An alternative index has been computed by Richard Moorsteen and Raymond Powell in *The Soviet Capital Stock, 1928–1962* (New Haven: Yale Univ. Press, 1966), Table P-1 and in p. 1 of the 1968 supplement to their volume, Table P-1-X. Abraham Becker collaborated in the supplement. Their indexes are based on 1937 adjusted factor-cost

Table 5.1. Official and Western calculations of growth rates of Soviet national product (average annual rates)

Period	*Official* [a]	*Western* [b]	*Divergence* [c]
1928–1932	16.2	2.0	14.2
1932–1937	16.2	6.6	9.6
1937–1940	10.0	3.6	6.4
1950–1955	11.3	6.9	4.4
1955–1958	10.2	7.4	2.8
1958–1961	7.5	5.8	1.7
1961–1966	6.7	5.6	0.9

a. For the prewar period, B. P. Plyshevskii, *Raspredelenie natsional'nogo dokhoda v SSSR,* (Moscow, 1960), p. 138. For the postwar period, *Narkhoz 65,* p. 589, and *Strana Sovetov za 50 let* (Moscow, 1967), p. 30.
b. See textual references to the Kaplan and Cohn indexes.
c. Official rate minus Western-computed rate.

estimates of growth rates be explained and why has the degree of overstatement notably lessened since the mid-fifties?

Features of the Official Index

The official index is based on the incomes created rather than upon the final expenditures incurred in the productive process.[7] By contrast, most market-economy indexes of GNP are derived by deflation of final product. The starting point for the official index is the calculation of gross output for the component originating sectors (industry, agriculture,

weights in contrast to my 1959 weights. Their industry and agricultural output indexes differ somewhat from mine. If our alternative growth rates are compared for selected periods since 1950, it will be observed that the Moorsteen-Powell-Becker indexes are some

Average annual rates

Period	*Moorsteen-Powell-Becker*	*Cohn*
1950–1955	7.7%	6.9%
1955–1958	8.2	7.4
1958–1961	6.2	5.8
1961–1966	6.0	5.6

11 percent above mine prior to 1958 and about 7 percent higher since that date. However, rates of acceleration and deceleration (second derivative) are almost identical for the two sets of estimates. If drawn on a chart, the two trend lines would have similar slopes. While the M-P-B index would show a smaller divergence from the official index than does mine, the divergence would still have to be explained by procedures similar to those employed in subsequent passages in this text.

7. In *Narkhoz 67* an index of "national income used for consumption and accumulation" is published for the first time. It shows a lower rate of growth than the "national income produced" time series. The difference is explained in terms of losses, the foreign balance, and the structure of income, presumably differences in weighting (p. 920).

construction, transportation and communication, trade and supply, and miscellaneous activities). In accordance with the Marxist concept of a product as always being something material, services are considered an element of redistribution rather than creation of national product.

Gross-output estimates, which are based on reports to TsSU from producing enterprises, are converted to net output by deduction of cost of materials (intermediate product) from the gross figures. The netting calculations are made by TsSU. For most of the sectors the output estimates in current prices are converted to constant terms by the process of "double deflation." Gross-output indexes are computed in constant as well as current prices. Appropriate price deflators are applied to the material-inputs time series. The difference between deflated gross output and material inputs is the deflated net-output time series. Deflated net-output estimates for each of the component originating sectors are then summed to obtain a deflated national income time series.[8] For the transportation and trade sectors a simpler technique is used instead of "double deflation." For transportation it is assumed that the net/gross ratio prevailing in the base year remains unchanged. A net index is obtained by moving this ratio by an index of freight turnover. The procedure for the trade sector is similar, the base year net/gross ratio being moved by an index of trade turnover.[9] Of course this simplified technique makes no allowance for improvements in productivity nor for any fundamental technological innovations.

With the nature of the official index and the earlier criticisms of Western specialists in mind, we can list several factors which may explain the overstatement of official growth rates. The restricted concept of national product, stemming from Marx and from subsequent modifications in his theory,[10] excludes most services from the definition of national income. Since services are largely consumer-oriented, their exclusion from official coverage could inflate the trend in aggregate output by omission of low-priority sectors with below-average rates of growth.

The influence of the disequilibrium nature of Soviet pricing is twofold in its possible effect. Since turnover tax is considered a factor payment, the disparate incidence of the tax among sectors could distort the relative weights of the sectors compared to their values in terms of conventionally defined factor payments. Since growth rates have widely varied among

8. A. I. Ezhov, *Sistema i metodologiia pokazatelei sovetskoi statistiki* (Moscow, 1965), pp. 234–38; *Narkhoz 65*, pp. 813–14.

9. M. V. Kolganov, *Natsional'nyi dokhod* (Moscow, 1959), pp. 314–15.

10. For a penetrating discussion of the interpretation of Marx's statements on the definition of national income by Soviet economists see Vaclav Holesovsky, "Karl Marx and Soviet National Income Theory," *American Economic Review* 51, no. 3 (June 1961): 325–44.

originating sectors, inclusion of the tax could distort growth trends. Secondly, the peculiar Soviet pricing system could affect the quality of the deflators employed to convert estimates of current gross output and material input into constant prices. Of particular significance is the technique by which new products are incorporated into output indexes. In the past, this procedure has been considered an important source of upward bias in official measures.

The foregoing possibilities all relate to the aggregation procedure. There remain the distortions arising from official estimation of the component originating sectors indexes in themselves, before the stage of aggregation of the component sector index is reached. Detailed discussions of the most important originating-sector indexes will be found in other chapters of this volume. In this chapter I do not attempt to intrude upon their expertise, but rather to differentiate factors inherent to particular originating-sector indexes from those which pervade the entire aggregation process. Each of the foregoing possible explanations of the divergence between official and Western-computed indexes will be examined in turn.

Statistical Significance of the Use of the Marxist Concept of National Product

Adherence to the Marxist concept of national product is one of the factors which explains divergence between official and Western estimates of growth trends in the Soviet GNP. As is explained in great detail in Chapter 4 above, the Soviet concept of national income excludes all service-producing activites other than those which directly contribute to production and distribution of commodities. In terms of the seven-sector division of GNP which I and other Western specialists have used to calculate Soviet GNP indexes, adoption of the Soviet concept would exclude all of the services category (with its components—housing, education, health, administration, science, and defense services), the passenger transportation portion of the transportation sector, and the portion of the communications sector relating to communications services rendered to individuals.

Since the weight of the communications sector is very small and the passenger-transport element in total transportation activity is of minor importance, the simulated computation of GNP trends according to the Soviet concept involves the removal of the services sector. Accordingly, the basic Western sector indexes have been aggregated without the services sectors as an approximation of a GNP index reflecting only material product. These growth rates are then compared with those for the same

periods, inclusive of services. Since both sets of indexes use the same Western-computed sector output indexes, any difference in their trends can be explained by coverage. The differences between the two sets of indexes are designated as coverage-induced gaps (Table 5.2). These gaps are then compared with the actual gaps between official and Western indexes.

Table 5.2. Differences in official and Western-computed trends in Soviet GNP attributed to coverage of national product (average annual rates)

	Differential growth rates	
Period	*Coverage-induced gap[a]*	*Actual gap[b]*
1928–1932	−1.0	14.2
1932–1937	0.3	9.6
1937–1940	none	6.4
1950–1955	1.2	4.4
1955–1958	1.5	2.8
1958–1961	0.1	1.7
1961–1966	0.2	0.9

a. Western-computed sector indexes of output weighted alternatively by inclusion and exclusion of services.
b. See Table 5.1 for derivation.

In no period has the constraint of the Marxist material-product concept of national income significantly induced a higher growth rate for national product. In the prewar period, differential coverage either does not explain divergent growth rates or actually provides an offset to measured differences. In the postwar years, differences in coverage explain half of the measured difference in the 1955–58 period and less than a quarter of the difference in the 1950–55 period. The coverage gap is infinitesimal after 1958. The coverage factor would be significant only in those years in which the growth rate for the excluded sectors differed markedly from that of the commodity-producing sectors. The years of the mid-fifties were marked by rapid demobilization of the armed forces, with a reduction in total strength from over six million in 1953 to barely three million in 1960. If the services category were restricted to civilian-oriented activities, the growth rate for the services would be some $2\frac{1}{2}$ times as high as a measure inclusive of military activities in the 1955–60 period. For all other periods the growth of service-oriented activities has not proceeded at a rate different from that of commodity-oriented activities in the Soviet economy. While the growth of services purchased by the private consumer, especially housing, was slow, as was the output of consumer goods, the growth rates for publicly consumed services, such as education, health, and science, have been high.

The extent to which the gap between official and Western-computed

indexes can be explained as the result of a more limited coverage under the Marxist concept is even smaller in the prewar than the postwar period. This surprising result may possibly be explained by less divergence between the growth rates of services and commodity production in the 1928–40 period. Nevertheless, the result casts additional doubt on the coverage aspect as the key to differences in measured growth rates.

It may therefore be concluded that differing concepts of the boundaries of national product play little or no role in explaining historical wide differences in official and Western estimates of GNP trends. In fact, if the trends in defense services were excluded, recomputations on a material-product basis would differ little from trends computed according to standard Western practices. One must look elsewhere for the clues to the historical divergence between official and Western-computed Soviet national product trends.

The more limited Marxist concept of national product is also of minor impact when applied to growth trends for the principal market economies in the postwar period (Table 5.3).

Table 5.3. GNP growth rates for major market economies according to Western and Marxist product concepts (average annual rates)[a]

	1950–1957		*1958–1966*	
Country	*Western concept*	*Marxist concept*	*Western concept*	*Marxist concept*
France	4.7%	4.8%	5.0%	5.2%
Germany	7.6	9.0	6.4	5.9
Italy	5.7	6.7	5.2	5.7
United Kingdom	2.3	2.6	2.9	3.1
United States	3.6	3.5	4.1	4.1

a. Organization for Economic Cooperation and Development, *Statistics of National Accounts, 1950–1961*; O.E.C.D., *National Accounts, 1957–1966.*

In fact, in some of the comparisons the Marxist concept yields a lower growth rate than the Western concept. One must, therefore, conclude that the coverage of national product will be significant only in circumstances in which the growth rate of the excluded sector is markedly below that of the commodity-producing sectors. Such instances are few in either Soviet or market-economy experience.

Effect of Soviet Pricing and Weights

Both pricing and sector-weighting methodology are dissimilar in official and Western-computed trends of Soviet national product. Western-

computed weights represent factor payments by the seven originating sectors (industry, agriculture, construction, transportation, communications, trade, and services.) The extent of inclusion of factors varies by estimator, as does the choice between national income and the broader concept of national product by sector.[11] The weights for the prewar indexes include factor payments to labor (wages and salaries plus supplements) and profits, with deduction of turnover taxes from agricultural incomes.[12] For the postwar years the weights include similar factor payments to labor, to capital in terms of interest return on fixed and working capital assets, a land-rent return to agriculture, and depreciation charges in all sectors.[13] As in the prewar set of weights, the weight for agriculture has been reduced by deduction of that portion of turnover taxes not assumed to represent compensation for factor services. The significance of this adjustment will be explained shortly. The derivation of weights is crucial to evaluation of both the prewar (Kaplan) and postwar (Cohn) indexes, since they are both obtained by aggregating separate sector indexes of output by weights which reflect proportionate values-added. They are hopefully computed in terms of true factor cost by adjusting agricultural incomes for turnover taxes. In this way the major deficiency of the Soviet price system is circumvented.

Unlike the two Western-computed GNP indexes used in this study, the official national income index is based on deflated trends in net output rather than weighted trends in originating-sector factor payments.[14] Since Soviet national income accounting does not deduct turnover taxes from the net value of sector output, the relative contributions of component sectors to total output are influenced by the incidence and magnitude of the turnover tax. Although the bulk of turnover-tax receipts arise from products of agricultural origin,[15] the tax is not assessed until farm products are sold by state procurement organizations to industrial enterprises or to state trading organizations. Taxes which industrial and trading enterprises pay on goods they sell are regarded as elements of

11. The Kaplan weights for the prewar years are based on 1955 weights computed by Morris Bornstein and others in *Soviet National Accounts for 1955* (Center for Russian Studies, University of Michigan, 1961), p. 78. The postwar weights are 1959 weights derived in Stanley Cohn, *Derivation of 1959 Value-Added Weights for Originating Sectors of Soviet Gross National Product* (Research Analysis Corporation, TP-210 1966), p. 20.

12. Bornstein, p. 84.

13. Cohn, p. 20.

14. The GNP index of Abram Bergson, systematically presented in his *Real National Income of Soviet Russia Since 1928*, is a deflated output index. Unlike the official index, Bergson deflates expenditures of the major end-use expenditures, rather than following the practice of deflating net outputs of originating sectors.

15. Approximately 84 percent of all turnover tax receipts in 1959 were paid by the light and food industries. See V. D. Belkin, *Tseny edinogo urovnia i ekonomicheskie izmereniia na ikh osnove* (Moscow, 1963), p. 190.

net product in these sectors. Therefore, the weights of the industry and commerce sectors are partially functions of tax policy, as well as of the sectoral distribution of productive factors. The main result of inclusion of turnover taxes in net product is to overweight industrial output and to a lesser extent trade output and to correspondingly understate the weight of agriculture. The effect of inclusion of turnover taxes can be seen in the contrast of 1937 official sector weights with those of Powell and Moorsteen and 1959 official sector weights with those of Cohn (Table 5.4). Both sets of Western-computed weights have been adjusted to the Soviet coverage of national product by elimination of the services sector.

Table 5.4 Comparison of official and Western-computed weights for originating sectors of Soviet national product (percentage of total)

	1937		*1959*	
Sector	*Official* [a]	*Powell and Moorsteen* [b]	*Official* [c]	*Cohn* [d]
Industry	50.4	39.4	52.3	37.3
Agriculture	29.6	37.9	21.3	34.8
Construction	5.7	6.3	9.5	11.8
Transportation and communications	3.4	10.1	4.8	8.8
Trade	8.1	6.3	12.1	6.4
Total	97.2	100.0	100.0	99.1

a. B. P. Plyshevskii, *Raspredelenie natsional'nogo dokhoda* v *SSSR* (Moscow, 1960), p. 38.

b. Raymond Powell and Richard Moorsteen, *The Soviet Capital Stock, 1928–1962* (Homewood, Ill.: Richard Irwin, 1966), Table P-1.

c. Narkhoz 62, p. 482.

d. Stanley Cohn, *Derivation of 1959 Value-Added Weights for Originating Sectors of Soviet Gross National Product* (Research Analysis Corporation, TP-210), p. 20.

There would be an upward bias introduced into the official trends because of the overweighting of industry and the underweighting of agriculture, but this bias would be partially offset by underweighting the rapidly growing construction and transportation sectors and overweighting the laggard trade sector in official computations. In order to estimate the bias introduced by the official weighting procedures, national product trends are recomputed, using Western sector output indexes, weighted, alternatively, by Western and by official values. The margin of the officially weighted indexes over those using Western weights has been termed the "weighting-induced gap." In order to preserve comparability the Soviet coverage of national income is used. In this way the effects of differential component-sector output indexes and the differing concepts

of the coverage of national product are removed from the comparison (Table 5.5).

For the prewar years, weighting has a significant impact on trends only in the period 1928–32 and even then explains only about a third of the

Table 5.5 Differences between official and Western-computed trends in Soviet GNP attributed to weighting (average annual rates)

	Differential growth rates	
Period	*Weighting-induced gap*[a]	*Actual gap*[b]
1928–1932	5.0	14.2
1932–1937	0.8	9.6
1937–1940	−1.3[c]	6.4
1950–1955	2.3	4.4
1955–1958	0.1	2.8
1958–1961	1.0	1.7
1961–1966	0.5	0.9

a. Calculated by weighting Western sector indexes, derived in Table 5.6, by official weights and Western-computed weights listed in Table 5.4. Gap $= I_w W_s - I_w W_w$, where I_w = Western index, W_s = Soviet weight, and W_w = Western weight.

b. See Table 5.1, right column.

c. A negative number indicates that the Western weighted growth rate exceeds the officially weighted rate.

actual gap between the two sets of indexes. In the postwar years the differential between official and Western indexes attributable to weights is smaller, although large enough to explain a considerable portion of the actual differences in the 1950–55 and 1958–61 periods, after abstracting for coverage. The impact of weighting is greater in those periods in which the differential between the rates of growth between industry and agriculture is larger. In particular the Soviet weighting pattern is upward biased in periods of decline or relative stagnation in agricultural output. This pattern would imply skepticism as to the validity of official agricultural-output indexes. Agricultural production declined under the trauma of collectivization between 1928 and 1932 and stagnated in the late-Stalin and earliest post-Stalin years (1950–55) and late-Khrushchev years (1960–66).

Since Soviet net-output indexes are available for only the 1958–61 and 1961–66 periods, it is not possible to derive a long-term weighting gap. Using Soviet output estimates for both periods, the gaps are 0.7 percent per year.

Deflators

As explained in the general description of the official indexes, the "double deflation" technique is used to convert most of the originating-

sector net indexes from current to constant prices. For the years 1928 to 1950 the comparable prices were unchanged 1926/27 prices, for 1951–55 they were 1951 prices, for 1956–58 they were 1956 prices, and for 1959 through 1966 they were 1958 prices.[16] Presumably the new 1967 prices will be used beginning with 1967 or 1968. In years in which the price base is changed, the trends are linked by deflating the estimate for these years in both the old and new prices.

The upward bias introduced by the use of 1926/27 prices has been amply demonstrated by Soviet and Western economists and will not be further treated in this discussion.[17] Postwar deflators do not incorporate the serious biases that are inherent in prolonged use of base-year prices in period of rapid structural change, but have still been questioned by Soviet economists. A prominent member of the Soviet mathematical school in economics, the late Albert Vainshtein, noted inconsistencies between the official national income price index and those for the principal originating components.[18] With 1950 = 100, the price deflator for national income in 1965 was 71.7. At the same time the indexes for the principal components of national income were all higher:

Wholesale industrial prices (without turnover tax)	84.3
Wholesale light industry prices (without turnover tax)	122.0
State retail prices	75.0
Prices of agricultural commodities on kolkhoz urban markets	106.7
Kolkhoz urban markets (without meat)	126.0

This apparent overstatement of price reduction and consequent overstatement of the rate of growth in national income led Vainshtein to use current-price estimates as the more valid measure of growth.

The same inconsistency appears if, for the prevailing 1958 constant prices, the price deflator for national income is compared with that of its main components. With 1958 = 100, the national income deflator for 1967 is 94.2. Similar price indexes for components are as follows:[19]

Whole industrial prices (without turnover tax)	114.5
Whole industrial prices (including turnover tax)	105.0
State retail prices	98.6
Construction costs	101.7
Urban collective farm market prices	120.1

Again none of the components shows a price reduction as large as that

16. *Narkhoz 65*, p. 813.

17. Bergson, pp. 178–88. Alec Nove, "1926/27 and All That," *Soviet Studies*, 9, no. 2 (Oct., 1957): 121–30.

18. Vainshtein, *Narodnyi dokhod Rossii i SSSR* (Moscow, 1969), p. 135.

19. *Narkhoz 67*, pp. 226, 227, 642, 671, 739, and 763.

of the average, and most show reverse trends. In addition, collective farm procurement prices rose sharply, with a 1966 level 39 percent above that of 1958.[20]

Since Soviet publications do not specify the particular price indexes used as deflators, particularly for the material inputs, it is not possible with any degree of precision to pinpoint the reasons for the inconsistency. If we assume that prices remained nearly unchanged between 1958 and 1965, as is implied by the sample of price indexes, then approximately two-thirds of the difference between the official and Western-computed annual average growth rate, 6.9 and 5.5 percent respectively, could be explained by the overstatement in the decline of the official national income price deflator.

Without disclosure of the particular price indexes used to deflate both gross output and material inputs of the component originating sectors, no further precision in the analysis of the official deflation procedure is possible. All that may be concluded from available evidence is that there are inconsistencies between the aggregate and component official price indexes pointing to an overstatement in the growth rate of national income.

While the aforementioned inconsistencies relate to the aggregation process, there remains the question of the validity of the originating-sector price indexes themselves. Other chapters in this volume cast doubt on their validity. In industry and construction, and perhaps in other sectors as well, there arises the issue of valuation of new products in constant prices. If, as many Soviet and Western analysts believe, new products are priced at high introductory-prototype prices rather than lower serial-production prices, increases in output are overstated. Therefore, the rise in the price index for gross output would be concomitantly understated. The impact of this practice on inflation of official investment growth trends is considered under the heading "Validity of Official Soviet Investment Indexes," below.

Since the trend in a sector's net output is also dependent upon the nature of the price deflator applied to material inputs, official procedures in this respect must be evaluated. To my knowledge there is no published information available on the nature of these deflators. Unlike the output indexes, indexes of material inputs are computed by TsSU rather than by the producing enterprise and ministry. Therefore, the incentive to manipulate the statistical evidence of performance would be absent, as these statistical results are not used as performance indicators. If there is any motivation toward statistical manipulation by TsSU, it is likely to be in the direction of maximizing net-output claims for a sector.

20. S. G. Stoliarov, *O tsenakh i tsenoobrazovanii v SSSR*, 3d ed. (Moscow, 1969), p. 121.

One way of furthering this aim would be to minimize the trend in material inputs so as to maximize the net/gross ratio. This goal could be implemented by maximizing the rise in the input price index. If the material input sample used for the price deflator is structured so as to allow for the introduction of new inputs, reflecting improved technology, priced at temporary higher prices, then the rise in the price index will be inflated. However, such a possibility must be regarded as sheer speculation until empirical verification becomes feasible.

In any event, the distortions introduced by questionable deflation procedures are of minor magnitude compared with those arising from the use of 1926/27 prices from 1928 to 1950.

Differences in Component Originating-Sector Trends

Neither the omission of most services from the definition of net national product nor the distortion in sector weights introduced by the inclusion of turnover tax as an element of value-added explained any significant part of the divergence between official and Western-computed rates of growth of Soviet national product, particularly in the prewar years. In the postwar period, differing weighting concepts did explain a significant share of much narrower differences in growth-rate estimates. The influence of official deflation procedures is more elusive, given the paucity of underlying information, but they appear to have also contributed to a small degree of overstatement of growth in the postwar period. In the prewar period their distorting influence was much greater.

Another way of isolating the factors which influence trends in the official national income time series is to analyze differences between official and Western-computed estimates for the component originating-sector outputs (Table 5.6). Of the foregoing factors, that of deflators is also incorporated into calculation of the originating-sector indexes, while that of coverage is independent of the component indexes. The problem of weighting primarily concerns aggregation of the component-sector indexes, but may also be internal to them in terms of the weighting of component products or branches in the case of industry and the composition of sales in the case of trade and supply.

For the three sectors for which official growth rates of net output are available for both prewar and postwar years, the divergences between official and Western-computed indexes are very wide for the 1928–40 period, but for the postwar years show only slightly higher rates for the official series. Moreover, for all five sectors, the differences either have been progressively narrowing since 1950 or have been reversed. In fact, only in industry have official indexes remained consistently higher than those prepared by Western scholars.

Table 5.6 Comparison of official and Western-computed trends in originating-sector net output (annual average rate)

Period	*Official*	*Western*
Industry		
1928–1932	24.1	11.3
1932–1937	19.8	11.0
1937–1940	14.3	4.3
1950–1955	14.5	11.4
1953–1960	10.9	9.8
1958–1961	9.4	8.4
1961–1966	8.9	7.6
1963	9.1	6.8
1964	7.1	7.6
1965	9.0	7.2
1966	10.4	7.7
Agriculture		
1928–1932	−0.5	−4.7
1932–1937	8.5	4.6
1937–1940	−1.0	3.6
1950–1955	2.3	4.8
1953–1960	5.8	5.1
1958–1961	1.3	1.7
1961–1966	2.6	3.2
1963	−10.5	−4.7
1964	20.2	10.8
1965	−5.5	2.7
1966	8.3	3.4

Sources

Industry

Official: B. P. Plyshevskii and Iu. V. Iaremenko, *Zakonomernosti dvizhaniia obshchestvennogo produkta i natsional'nogo dokhoda* (Moscow, 1963), pp. 113–14. *Narkhoz 60*, p. 153; *61*, p. 598; *62*, p. 482; *63*, p. 502; *64*, p. 577. D. N. Karpukhin, ed., *Struktura narodnogo khoziaistva i proizvoditel'nost' truda* (Moscow, 1968), p. 60. *Vestnik statistiki*, 1969, no. 2, p. 80.

Western: Richard Moorsteen and Raymond Powell, *Soviet Capital Stock, 1928–1962* (Homewood, Ill.: Richard Irwin, 1966), Table P-1. James Noren, "Soviet Industry Trends in Output, Inputs, and Productivity", in U.S., Congress, Joint Economic Committee, *New Directions in the Soviet Economy* (Washington, 1966), pt. II-A, p. 280. Idem, *Soviet Economic Performance, 1966–67* (Washington, 1968), p. 23.

Agriculture

Official: Same as for industry.

Western: Norman Kaplan, "The Retardation in Soviet Growth", *Review of Economic Statistics* 50, no. 3 (Aug. 1968), App., Table A-1; Douglas Diamond, "Trends in Output, Inputs, and Factor Productivity in Soviet Agriculture" in *New Directions in the Soviet Economy*, pt. II-B, p. 346; *Soviet Economic Performance, 1966–67*, p. 28.

Construction

Official: Same as for industry.

Western: Kaplan, "Retardation"; Moorsteen and Powell, Tables A-6 and A-6-x. U.S., Congress, Joint Economic Committee, *Annual Economic Indicators* (Washington, 1964), p. 41, idem, *Soviet Economic Performance, 1966–67*, p. 42.

Table 5.6 (continued)

Period	*Official*	*Western*
Construction		
1928–1932	23.4	15.4
1953–1960	12.1	9.2
1958–1961	7.4	8.2
1961–1966	4.8	5.0
1963	3.2	2.0
1964	6.2	6.0
1965	7.2	8.6
1966	6.1	6.9
Transportation and communications		
1953–1960	15.7	11.8
1958–1961	14.5	9.6
1961–1966	8.0	8.3
1963	8.3	8.6
1964	9.4	9.4
1965	7.5	10.6
1966	9.5	4.0
Trade and supply		
1953–1960	9.1	5.1
1958–1961	7.2	6.8
1961–1966	4.3	5.3
1963	0	5.0
1964	7.9	6.1
1965	8.0	5.5
1966	2.7	4.5

Transportation and communications

Official: Same as for industry

Western: Kaplan, "Retardation," and idem, *Soviet Transport and Communications, 1928–1962,* TM-4262-PR (Santa Monica, Calif.: The RAND Corporation, 1964), p. 55, and supplement of Nov. 1965, p. 7. 1964–1966 estimates are obtained by adjusting link relatives for the volume of freight traffic (annual issues of *Narkhoz* and *Strana Sovetov za 50 let*) by the 1955–1963 relationship between the index of freight volume and Kaplan's computed freight index.

Trade and supply

Official: Same as for industry.

Western: Kaplan, "Retardation." The index is moved by the trend in trade, procurement, and supply employment times an assumed increase in productivity per worker of 0.7 percent per annum. Employment data come from annual issues of *Narkhoz* and *Strana Sovetov za 50 let.* Productivity increment is based on an analogy to U.S. experience as calculated by Victor Fuchs in *Productivity Trends in the Goods and Services Sectors* (Washington: National Bureau of Economic Research, 1964), p. 13.

The lack of appropriate published official sector net-output indexes restricts the calculation to one based on Soviet sector weights (Table 5.7).

Differential net-output indexes explain a considerable part of gap between official and Western-computed GNP indexes for the prewar

Table 5.7. Differences between official and Western-computed trends in Soviet GNP attributed to sector net output indexes (average annual rates)

Period	*Differential growth rates*	
	Net-output index-induced gap[a]	*Actual gap*[b]
1928–1932	10.2%	14.2%
1932–1937	8.5	9.6
1937–1940	7.7	6.4
1950–1955	0.9	4.4
1955–1958	1.2	2.8
1958–1961	0.6	1.7
1961–1966	0.4	0.9

a. Calculated by comparing the difference between official and Western sector net-output indexes weighted by official weights. Gap = $W_s I_s - W_s I_w$, where W_s = Soviet weight, I_s = official indexes, and I_w = Western index.

b. See Table 5.1, right column.

periods. For the postwar periods the influence of differential output estimates is much narrower, but still provides for between a third and a half of the overall gap for the years since 1955. For the most recent two periods when the net-output-induced gap can be calculated with Western weights, the gaps are 0.9 percent per year for 1958–61 and 0.2 percent for 1961–66.

Conclusions with Regard to Gaps Between Official and Western-Computed National-Product Indexes

No single, simple explanation for the divergence between official and Western-computed Soviet national-product indexes will suffice. The foregoing influences have varying degrees of importance in different time periods. Differing concepts of coverage of national product are not significant in explaining gaps in the prewar period, and in the postwar years they are significant only in the periods 1950–55 and 1955–58 (Table 5.2). Differences in weights given to originating sectors of national product are significant in the prewar period only for the years 1928–32. In the postwar period they provide the single most important influence in explaining differential growth trends, being significant for all periods except 1955–58 (Table 5.5). The influence of differing indexes of originating-sector net product predominates in the prewar periods and is of significance in the postwar period since 1955 (Table 5.7). The two latter influences have been self-reinforcing, as the industrial sector has been overweighted in the official calculation (Table 5.4) and the official net-output index for that sector has been higher than the Western calculation (Table 5.6). By contrast the official estimate has underweighted the

agricultural sector and that sector's index has been lower than that computed by Western scholars since 1958.

The influence of questionable deflation procedures is difficult to quantify without more detailed information. The inconsistencies between the national income deflator and deflators for the principal originating-sector net-output indexes cited by Vainshtein can probably best be explained by differences between the cited deflators and those which are actually used by TsSU to deflate net output. If so, the actual sector deflators may be too low, and their impact would lie in the overstatement of growth in constant prices of the official indexes. Presumably the effects of erroneous deflation procedures have been reflected in the calculation of the "sector index induced gap."

It is possible to combine the calculations for the three gaps measured in the foregoing text and thereby explain the existence of the total gap between the official and Western estimates of Soviet national product (Table 5.8).

Table 5.8. Explanation of actual gap between official and Western estimates of Soviet national product (annual average rates)[a]

Period	*Actual Gap*[b]	*Coverage Gap*[c]	*Weighting Gap*[d]	*Net Output Gap*[e]
1928–1932	14.2%	−1.0%	5.0%	10.2%
1932–1937	9.6	0.3	0.8	8.5
1937–1940	6.4	none	−1.3	7.7
1950–1955	4.4	1.2	2.3	0.9
1955–1958	2.8	1.5	0.1	1.2
1958–1961	1.7	0.1	1.0	0.6
1961–1966	0.9	0.2	0.3	0.4

a. Actual gap equals summation of coverage, weighting, and net output index gaps. *b.* Table 5.1. *c.* Table 5.2. *d.* Table 5.5. *e.* Table 5.7.

It may be concluded that in the prewar period the principal explanation for the gap between official and Western estimates of national product lay in widely varying net-output estimates for the component sectors. In the postwar periods the much narrower gap is explained both by differing net-output indexes and the distorting effects on sector weighting introduced by the inclusion of the turnover tax in official calculations. For the most part the limited Marxist concept of national product has not been a significant influence.

Unofficial Soviet National Income Indexes

The independence from official doctrine and policies of the rising school of Soviet mathematical economists has had manifestations in the

area of national income trends. The official series has either been rejected outright, as in the case of Vainshtein,[21] or implicitly in independent calculations with no reference to official estimates. These unofficial calculations are econometric applications of mathematical production functions, rather than deflations of production output time series.[22]

Mikhalevskii and Solov'ev use a Cobb-Douglas production function with three factor inputs—labor in man-hours, capital (fixed assets, working capital, consumer durables), and natural resources (land and mineral wealth). The weights (output elasticities) for the inputs are derived from income shares in national output. In addition the authors have estimates for economies of scale and technical progress. These values are obtained by a regression fitted to annual data for the period 1951–63.[23] The resulting national product growth estimates are considerably lower than official calculations for the period and are quite close to Western-computed estimates (Table 5.9). Furthermore, there is no reference to official estimates in their articles.

Table 5.9. Growth estimates compared

Estimate	*Annual average growth rates*		
	1950–58	*1958–63*	*1950–63*
Official[a]	10.5%	6.3%	9.1%
Mikhalevskii-Solov'ev[b]	8.7	4.4	7.0
Western-computed[c]	7.1	4.9	6.2

a. See Table 5.1.
b. B. N. Mikhalevskii and Iv. P. Solov'ev, *Ekonomika i matematicheskie metody*, 1966, no. 6, p. 837; Mikhalevskii, 1967, no. 2, p. 220.
c. See Table 5.1.

Lest unqualified satisfaction prevail at the discovery of an independent Soviet estimate of growth which more closely resembles Western than official estimates, some limitations in the procedure of Mikhalevskii and Solov'ev should be taken into consideration. Their concept of the boundaries of national product is the traditional Marxist one of material product. However, as noted earlier, this differing definition of the coverage of national product is of limited significance in explaining divergence between official and Western indexes. The concept of final product, which

21. A. L. Vainshtein, *Narodnyi dokhod;* see the discussion under "Deflators," above.
22. B. N. Mikhalevsky and Iu. P. Solov'ev, *Ekonomika i matematicheskie metody*, 1966, n. 6, pp. 823–40. Also B. N. Mikhalevskii, *Ekonomika i matematicheskie metody*, 1967, no. 2, pp. 199–222.
23. For a comprehensive account analysis of these articles see Frederick Denton, "A Recent Soviet Study of Economic Growth 1951–63," *Soviet Studies* 20, no. 4 (April 1968): 501–9.

differs from national income by the inclusion of amortization charges, is used by the two Soviet econometricians.

The two econometricians unqualifiedly accept the limitations of Soviet pricing, with subsequent impact on the weights of the productive factors. The labor share is estimated by summation of primary income—wages, salaries, and supplements and imputed labor incomes. The share of natural resources is estimated by capitalizing economic rent. The capital share is then derived as a residual, and thereby profits and turnover taxes are included in its share. As a result the share of labor in the production function is much smaller, 54 percent, than my estimate of 70 percent[24] or Bergson's range of 67–80 percent.[25] The capital share of 33 percent is higher than my capital coefficient of 26 percent in a production function including land and livestock as separate factors,[26] and much above Bergson's range of 8 to 18 percent.

Since capital stock has increased at a much faster rate than employment (man-hours), the significance of the high capital coefficient is to overstate growth. There may be a possible offset in terms of the high weight given to natural resources, 12.5 percent, if the preponderant part of this category consists of agricultural land; but the authors are not explicit on the composition of the factor.

Qualitative improvements in the employed labor force are estimated, not on the basis of educational attainment, but more simply in terms of skill levels, as represented by wage-rate differentials. Arbitrary elements in Soviet wage determination and the inflexibility of Soviet wages over time cast doubt on the validity of wages as a skill proxy. By their measure the average annual rate of quality improvement was 0.36 percent, only a fraction of the increase in educational stock per employee of 5.2 percent for 1950–58 and 2.6 percent for 1958–64.[27] Qualitative adjustments for capital are confined to fixed assets and are a function of retirement and depreciation rates and the output elasticity of capital (increase in output per unit increase in capital stock.)

Mikhalevskii and Solov'ev employ questionable deflation procedures. For the most part they deflate incomes by price indexes for output on which the respective incomes are mainly spent. For example, money incomes are deflated by a consumer price index, and profits and turnover taxes by a wholesale price index. The use of such proxy indicators

24. Cohn, *Derivation of 1959 Value-Added Weights*, p. 21.

25. Abram Bergson, "National Income," in Bergson and Kuznets, *Economic Trends in the Soviet Union* (Cambridge, Mass.: Harvard University Press, 1963), p. 19.

26. Stanley Cohn, "The Soviet Economy: Performance and Growth", in Vladimir Treml, ed., *The Development of the Soviet Economy: Plan and Performance* (New York: Praeger, 1968), p. 54.

27. Cohn, "*Soviet Growth Retardation,*" p. 123.

depends on two crucial assumptions: (i) there is complete symmetry between the incomes being deflated and the sample of output on which they are supposedly spent, and (ii) annual trends in the incomes and the proxy outputs are similar. Neither of these conditions is likely to be satisfied. Without specific data the nature of the bias arising from their deflation procedure cannot be determined.

In spite of these deficiences, it is encouraging to see the emergence of unofficial growth indexes from the pens of Soviet scholars. Even though some of the shortcomings remain from the official index, others, particularly the problem of new products, have been eliminated. Of course, it is gratifying to discover a Soviet estimate below the official growth rate and in much closer proximity to estimates of Western specialists.

Validity of Official Soviet Investment Indexes

The bulk of this chapter has been concerned with the evaluation of official aggregative national income indexes. Now let me devote a few pages to evaluating official Soviet investment indexes. Since the official national income index is aggregated from component indexes of net output for originating sectors, investment indexes are not necessarily calculated so as to achieve consistency with the deflated national income estimates. However, investment time series in constant prices are computed and can be evaluated as independent calculations.

Although there are official estimates of annual additions to working capital, no attempt is made to convert them from current-price to constant-price terms; hence my evaluation will be limited to indexes of fixed investment. In official statistical methodology, investment statistics can be classified by function and by type of organization undertaking the investment. The major functional divisions are construction and installation; equipment, tools, and stock; and other capital cost (design-research expenditures, geological prospecting, site preparation, and training expenses). The main organizational divisions are state and cooperative enterprises and organizations, *kolkhozi* (collective farms), and privately constructed housing. Capital repairs are excluded from the official concept of growth investment. Over the past fifteen years the "other" functional category has averaged only about 6–7 percent of the total,[28] so the discussion can be limited to the construction and equipment categories. Also since the state and cooperative organizational category has comprised nearly seven-eighths of total investment outlays[29] over the past decade, there will be no reference to the particular problems of estimation

28. TsSU, *Strana Sovetov za 50 let*, p. 200.
29. Ibid., p. 197.

of kolkhoz and private-housing investment statistics, even though both categories are worthy of separate treatment. Since the estimation and deflation problems relating to construction and to equipment expenditures are quite distinct, the two categories will be discussed separately.

Comparison of Official and Western-Computed Indexes

Before commencing an analysis of the official investment indexes it would be useful to set a perspective by comparing the official indexes with those computed by Moorsteen and Powell.[30] (Cf. Table 5.10) No comparison is made of the equipment index, since Moorsteen and Powell base their estimate on the official series beginning with 1956.

Two generalizations can be drawn from the table. The disparity between official and Western-computed indexes has been narrowing, especially if compared with the prewar period, and the disparity between indexes for total investment is less than that for construction. In part, the latter conclusion is explained by the use of official indexes of equipment investment by Moorsteen and Powell. Much of the difference should be attributed to the different indicators used. The official indexes deflate a weighted valuation of construction components, while that of Moorsteen and Powell deflates one of construction materials. Neither the conceptual evaluation nor the simulated empirical comparison of the two approaches will be attempted in this study. However, Powell does cautiously claim

Table 5.10. Comparison of selected official and Western-computed investment indexes

	Construction		*Housing*		*Total investment*	
Period	*M-P*	*Official*	*M-P*	*Official*	*M-P*	*Official*
1950–55	169.7	182.8	129.7	187.6	168.6	179.6
1955–58	129.8	150.2	201.2	198.8	139.0	150.6
1958–61	124.6	127.6	111.4	104.1	123.4	127.6
1961–66	119.4	127.6	102.6	114.5	135.9	139.4

Sources: Moorsteen and Powell, *Soviet Capital Stock, 1928–1962*, Tables 7–2, A-4-X, D-2-X, D-10-X; *Strana Sovetov za 50 let*, pp. 198 and 203.

that his method provides a reasonably reliable approximation of the U.S. construction index.[31] Primary attention in this chapter will be directed toward evaluation of the official indexes.

30. Moorsteen and Powell, *Soviet Capital Stock, 1928–1962;* also the supplement published by the Economic Growth Center of Yale University, 1968.

31. Raymond Powell, *A Materials Input Index of Soviet Construction, 1927/28 to 1955*, RM-1872 (Santa Monica, Calif.: The RAND Corporation, 1957), p. 37.

Construction Indexes

The task of devising a construction index is a formidable one, given the non-standardized nature of the service. Since no unit of construction output can be regarded as typical, most statisticians have been obliged to adopt the compromise of using some standard set of inputs, adjusted for productivity improvements, which hopefully reflects the heterogeneity of construction output. The input samples range from primary inputs (construction materials, labor, overhead) to intermediate products (walls, excavations, floor space, wiring, foundations, partitions, piping, etc.). The Soviet index is based on construction components or basic intermediate construction elements. For each type of construction there are standard input coefficients of the main construction components. The costs of these components are in turn based on prices of material and labor inputs. Variations are introduced in the technological coefficients to reflect regional conditions.

From 1955 through 1968 the index of construction was based on adjusted 1955 estimate prices (new estimate prices were introduced in 1969). Estimate (*smetnyi*) prices are based on list prices for standard input coefficients into specified construction components plus normed overhead charges. Wages are reckoned at prevailing base-year rates, and materials cost at wholesale transfer prices. Original 1 July 1955 prices were increased to reflect higher wage rates in 1956, reduced in 1958 to include lower overhead charges, further reduced in 1959 to reflect lower installation charges, and still further reduced in 1962 along with reduced costs of project design work and selective reduction in overhead charges.[32] Essentially, estimate prices make no allowance for productivity advances, since they freeze technical coefficients according to base-year standards. Apparently the only widespread adjustments in estimate prices are those which occur as a result of changes in general price, wage, and overhead charges which affect the entire spectrum of construction. Ad hoc adjustments are made when there are design changes.

By contrast the index of actual (*faktícheskii*) construction cost reflects both changes in prices of inputs and in combinations of inputs for standard construction components. This concept thus takes productivity advances and technological changes into account. A Soviet statistical handbook in referring to the estimate cost index indicates that it is affected by changes in wholesale prices, freight rates, overhead charges, and installation costs; in the footnote to the actual construction cost index it mentions these factors and in addition states that the index is affected by "cost reductions arising from industrialization of construction,

32. *Narkhoz 65*, p. 837.

mechanization, increase in labor productivity, economies in use of materials, and other measures provided for in the regulations."[33]

Between 1955 and 1960 the estimate cost index rose by 6 percent, while the actual index declined by 1 percent.[34] From 1960 to 1967 the actual index was about constant, while there has been no official publication of the estimate cost index. However, a leading specialist on investment has cited Gosstroi estimates to show that average estimate prices increased about 25 percent from 1962 to 1966. The general price changes introduced at the beginning of 1967 on metals and construction materials and accompanying wage increases increased estimate prices by an additional 15 to 18 percent.[35] The large increase during the final years of the Seven Year Plan are blamed partly on higher input prices, but mainly on faulty planning. Poor project designing, particularly in applications of new technologies led to revisions in construction requirements which required more costly variants.[36] Upward cost revisions were especially high in electric power, chemicals, gas, and ferrous metals.[37] To the extent that upward revisions reflected the incorporation of new technology, the problem is analagous to the new-product issue in industrial production statistics.

The reason why the actual construction price index has remained nearly constant since 1960 while the estimate price index has risen considerably has not been discussed in Soviet sources. Either input savings have offset the cost-increasing effects of more complex technology or the sample of components has not been changed to reflect changed technology. This divergence in trends aside, the relevant question in our context is the effect of such increases in estimates prices on the construction output index. If the price increase is genuine because of more complex technology, presumably this rise represents an increase in quality, much as a price increase in a more complex producer durable would. As such, the actual rise in prices is overstated and the growth in output commensurately understated. If the price increase reflects errors in planning without a technological improvement or such conditions as a shift in the locus of construction to higher cost (eastern regions)[38] then a price in-

33. TsSU, *Kapital'noe stroitel'stvo v SSSR* (Moscow, 1961), pp. 258–59.

34. Ibid.

35. V. Krasovskii, *Voprosy ekonomiki*, 1968, no. 10, p. 46.

36. A reference provided by Abraham Becker suggests an organizational incentive factor for this tendency. According to Bukshtein, *Ekonomika stroitel'stva*, 1966, no. 8, pp. 53–54, design organizations are rewarded for lowering estimate costs and are not responsible for subsequent increases in such costs of the project due to faulty estimate costing in the design stage.

37. Krasovskii, *Voprosy ekonomiki*, 1968, no. 10, p. 44.

38. Estimate prices are based on a national average with an assumed weighting of regional prices.

crease without a commensurate increase in real volume has been incurred. The price increase might not be genuine in a more insidious sense. Since estimate prices provide the valuation by which construction performance is measured, there would be an incentive for construction organizations to overstate values in estimate prices and to increase the degree of exaggeration with time.

There is evidence to suspect a considerable degree of inflation in estimate prices. One leading Soviet investment specialist notes that there has been a widening gap between reported fulfillments of plans for use of capital investment, reported in estimate prices, and fulfillments of plans for introduction of new productive capacity, reported in physical terms. In the period 1959–65 the plan for use of investment in ferrous metallurgy was fulfilled by 92 percent but the capacity introduction plans were fulfilled by only 64 percent for iron, 73 percent for steel, and 67 percent for rolled metal. In coal the investment use plan was fulfilled by 92 percent, but the capacity introduction plan by only 58 percent. In the machinery industry the respective indexes were 121 percent and 50 to 80 percent.[39] If the latter concept is equated with indexes of physical volume of investment, then the estimate price indexes overstate the real increase in investment.

Krasovskii in his discussion notes that a more reliable picture of investment progress requires "a more accurate estimate of the real volume of accumulation by accounting for capital investment not only in changing estimate costs, but in physical volume, that is by taking account of indexes of increased estimate cost." In a later passage he proposes that future plans include coefficients of price increases in order to preclude unjustified rises in investment costs.[40] His remarks clearly imply that the existing construction index based on estimate costs overstates the real volume of construction. Available data do not enable him to differentiate between genuine and spurious cost increases.

Equipment Indexes

Estimate prices and cost indexes are also computed for the equipment component of investment. Again the problem of heterogeneity asserts itself, as a significant share of installed equipment is custom-produced. As in the case of construction, prices are specified for standard equipment and tentative prices for new or unique machinery and other equipment installations.

The main concern with the estimate cost index for equipment arises in the valuation of nonstandard equipment. In a recent year approxi-

39. V. Krasovskii, *Voprosy ekonomiki*, 1968, no. 10, p. 44.
40. Ibid., pp. 44, 45.

mately 50 to 55 percent of all machinery was of nonseries manufacture, i.e., unique products. Under industrial pricing procedures such items are valued at temporary prices, some 30 to 40 percent above standard prices.[41] The same situation prevails with respect to pipelines and other structural features fabricated on the construction site. Furthermore, there is a tendency for manufacturing enterprises to retain these higher temporary prices long after the expiration of the three-year time limit set for temporary prices. This practice leads two leading investment specialists to conclude that long-term equipment volume indexes are not genuine constant-price indexes, but are mixed indexes in which new products are valued at current prices.[42]

Given the proportion that equipment and structural items subject to the abuses of temporary prices comprise of total investment, it has been estimated that the cost of investment by 1964 had been increased some 10 to 12 percent as a result of the persistence of higher temporary prices.[43] Further compounding the problem has been another abuse of the temporary pricing privilege. Particularly in the production of specialized equipment for chemical and nonferrous metallurgical plants, there have been occasions in which standard equipment has been classified as "nonstandard" because construction organizations have been unable to order it from specialized producers or because its production was not foreseen in production plans.[44]

The tendency toward inflation of output emanating from higher prices on nonstandard products arises also in the calculation of industrial output indexes under the rubric of the new-product problem. Its reflection of the validity of the investment index is, therefore, a continuation of the same problem at a later stage in the economic process.

Operational Role of GNP-Type Indicators

In any economy the degree of development of any set of statistical indicators is a direct function of their operational utility to policy makers and administrators. Gross national product statistics relate, of course, to a macro view of the economic process and would thereby be of relevance to a government concerned with macroeconomic equilibrium. Since the emphasis of the Soviet command economy has been microeconomic in emphasizing development of only limited sectors of the economy, the problem of macroequilibrium has been of secondary importance. Furthermore the stress on administrative allocation of resources is necessarily

41. Ia. Kvasha and V. Krasovskii, *Voprosy ekonomiki,* 1964, no. 11, p. 12.
42. Ia. Kvasha and V. Krasovskii, *Voprosy ekonomiki,* 1968, no. 4, p. 79.
43. Krasovskii, *Voprosy ekonomiki,* 1968, no. 10, p. 45.
44. V. Krasovskii, *Problemy ekonomiki kapital'nykh vlozhenii* (Moscow 1967), p. 167.

microeconomic in concept. The Party leadership has been accustomed to conceive of their goals in terms of key intermediate products and perhaps final military products, but not the overall growth of the economy or of its major expenditure components. Given both the preferences of the leadership and the command principle of organization, it is not surprising that GNP indicators have played a minor role in the formulation and implementation of Soviet economic policies.

The lack of strong operational interest, in turn, explains the comparatively weak interest in national accounting by Soviet economists and statisticians. Conceptual discussions in the subject are largely unimaginative repetitions of traditional Marxist thought. Controversies which do occur are concerned with minor problems of measurement. Published statistics present only overall magnitudes of national income and its principal end use (consumption and accumulation) and originating-sectors components. No detailed underlying double-entry sets of accounts are presented, nor are there any data provided on the deflators used to convert current estimates to constant prices. Some of the smaller East European economies publish considerably more detail on their national accounts.

As decentralization of decision making, with the concomitant increased use of the market mechanism, proceeds in the USSR, the importance of macroeconomic equilibrium and the use of indirect control measures will grow. To the extent that authority for the production and pricing of particular goods and services increasingly devolves on lower echelon decision makers, the control instruments remaining in the hands of the central leadership become those of the indirect type—monetary and fiscal powers. If there is to be a rational exercise of power by the center under these changed circumstances, the information bases for the implementation of credit controls and of expenditure and taxation power will have to be improved. The leadership will be guided by a new set of indicators. Prominent among these will be the national aggregates and their principal expenditure subdivisions. Of equal importance will be the major income flow aggregates underlying the final totals—wages, profits, disposable incomes, savings, budget deficits and surpluses, and the like. Money-supply and balance-of-payments statistics will also become of paramount importance.

To the extent that priorities become blurred as the leadership increasingly concerns itself with maximizing the annual increments to productive capacity of the economy with which to satisfy the demands of many claimants, the target variable of overall growth assumes greater importance. The general objective of maximum growth will be supplemented

by the requirement to control resource allocation increasingly through fiscal and monetary measures.

These evolving administrative imperatives in turn pose requirements for new statistical indicators. An improved national product index would, of course, serve as the indicator of overall performance. If the index is to measure total progress of the economy, the inclusion of service-type activities is imperative. The rising importance of the services stemming from the increased importance of scientific research, the rapid growth of business-type services (data processing) and of consumer services, arising both from higher priority to the consumer and from high income elasticities, compel much closer attention to trends in the services sectors.

The use of indirect control instruments would also require the compilation of national product subaggregates not presently computed, or at least not published, by Soviet statistical agencies. Since the indirect instruments are intended to affect income flows of both consumers and producing enterprises, they could not be applied eclectically without data on trends in sources and uses of incomes of individuals and organizations. Besides statistical series indicating the general trends in income flows, it would be necessary to have time series of indexes of expenditures by appropriate categories and trends in sources and uses of savings. To the extent that macroeconomic equilibrium is important, explicit indexes of price deflators for various components of national product become vital inputs into the decision-making process.

This requirement brings into focus the broader problem of the economic invalidity of the existing price system. The sacrifice of a rational basis for decision making which the existing system imposes is particularly acute with respect to national accounts, as the greatest degree of distortion of scarcity values occurs in the distinction between consumer and producer goods prices. Since the primary function of a Western style system of national income accounts is to relate the varying claims on output, it is important that the consumer's share not be overstated in quoted prices, as is presently the case. Conversely, the real resource cost of investment should not continue to be understated.

6

Abram Bergson

Soviet National Income Statistics: Summary and Assessment

The meaning and reliability of Soviet official measures of the national income of the USSR are no longer especially novel themes for Western students of socialist economies. Through their thorough and scholarly essays, Becker and Cohn have succeeded in adding much to our understanding of those important topics.

Dr. Becker focuses especially on the methodology of Soviet national income calculations, including the scope of national income and the manner of its computation. Diverse tests for internal consistency are also applied. The result is a careful guide to the official data to which anyone concerned with such measures will be able to refer with profit. Among the many questions touched on, there are only one or two on which I can comment.

As Becker points out, the traditional Soviet concept of national income as limited to "material" production and excluding "services," a concept supposedly reflecting Marxian precepts, is now in the process of erosion. It is apparently also Becker's view that the erosion is to the good. I agree, but it may not be amiss to remind ourselves that the traditional Soviet concept is not all to the bad. Most important, for well-known reasons, deflation of outlays on diverse services is apt to be not very meaningful; so for some purposes, especially in productivity measurement, one may wish to omit such services from "real" national income. With such omissions, the resulting total is not likely to be very different in scope from the traditional Soviet one after all.

Becker cites a variety of ruble-dollar parities, ranging from $1.20 to $1.30 per ruble, that are implied in comparative data compiled from Soviet sources on national income in the USSR and USA in the years 1962 to 1964. Such parities are contrasted with one of $1.65 per (new post-1960) ruble that is implied in Morris Bornstein's comparison of Soviet and U.S. national income in 1955. It should be observed that that is the parity implied in Bornstein's translation of Soviet national income from rubles to dollars. Bornstein also translates U.S. national income from dollars to rubles, implying a very different parity of $.83 per ruble.

Becker nevertheless properly focuses on the former parity, for that is clearly the one which expressedly or by implication is used in Soviet comparisons of Soviet and U.S. output, a practice rationalized variously in the USSR, but for which it cannot be incidental that the result happens to be relatively favorable to that country.[1]

A question remains, however: why such a large discrepancy between the Bornstein parity of $1.65 per ruble and the Soviet official parities? The question is the more in order since, as Becker points out, in view of price trends in the USSR and USA in intervening years, the ruble should have gained rather than lost value relatively to the dollar from 1955 to the early sixties. What is the explanation? As we may judge from alternative computations I have recently made, one need not look much further than to the feature just referred to: the special nature of the Soviet national income concept. Thus, in translating Soviet gross national product from rubles into dollars in 1955 I find the implied value of a ruble to be $1.59, or approximately the same as the parity implied in the corresponding calculation by Bornstein. With the omission from output of a variety of final services (labor outlays for communal services, government administration, military pay and subsistence), however, the value of a ruble is found to fall to $1.22. This value is more or less in line with the Soviet official parities cited by Becker.[2] The latter, of course, relate to national income in the Soviet sense and so exclude services such as those just referred to. By implication the value of the ruble in terms of dollars is incomparably higher for services than for commodities. The high value of the ruble for services is also rather artificial, because of the difficulties alluded to of deflating service outlays. The possible merit of the Soviet national income concept is thus illustrated.

Professor Cohn also explores the methodology of Soviet official national income measures, but a principal concern of his is to appraise the reliability of the official data in constant prices by comparing them with corresponding Western data, particularly a composite of series compiled by Cohn and by Professor Norman Kaplan. How reliable, however, are the Western data on Soviet national income?

An independent appraisal could be the subject of an inquiry in itself, and Cohn understandably does not undertake to provide it. Nor can I fill the resultant gap. But it should be observed that, as Cohn suggests,

1. On the Soviet practice in the sphere in question, see A. I. Kats, *Proizvoditel'nost' truda v SSSR i glavnykh kapitalisticheskikh stranakh* (Moscow, 1964), pp. 49–51; A. F. Revenko, *Sopostavlenie pokazatelei promyshlennogo proizvodstva SSSR i SSHA* (Moscow, 1966), pp. 49–51.

2. The underlying computations are explained in Abram Bergson, "The Comparative National Income of the USSR and USA," a paper presented at a Conference on Research in Income and Wealth, Toronto, May 1970.

different Western series tend to be in marked agreement. I refer particularly to the principal computations in current use: my own and those of Kaplan and Cohn, and Raymond Powell, Richard Moorsteen, and Abraham Becker (Table 6.1). The calculations are not independent, but

Table 6.1. Average annual rate of growth, real national income of USSR: alternative calculation (percent)

	1928-1940	*1950-1955*	*1955-1958*	*1958-1961*	*1961-1966*
GNP, Bergson[a]					
in 1937 adjusted rubles	5.8 (5.3)[b]	7.6	–	–	–
in 1950 adjusted rubles	5.4	7.6	–	–	–
GNP, Moorsteen-Powell-Becker					
in 1937 adjusted rubles[c]	6.1	7.7	8.2	6.2	6.0
GNP, Becker					
in 1958 adjusted rubles[d]	–	–	–	5.7	6.1[e]
NNP, Kaplan					
in 1955 adjusted rubles[f]	5.1	6.4	7.0	4.9	3.5[g]
GNP, Cohn					
in 1959 adjusted rubles	–	6.9	7.4	5.8	5.6

a. Abram Bergson, *The Real National Income of Soviet Russia Since 1928* (Cambridge: Harvard Univ. Press, 1961), p. 210.

b. The figure in parentheses results from an alternative aggregation of retail sales.

c. Richard Moorsteen and Raymond P. Powell, *The Soviet Capital Stock, 1928–1962* (New Haven: Yale Univ. Press, 1966), pp. 619 ff., and p. 25 of pt. 1 of the "Two Supplements" to this volume, prepared by Moorsteen and Powell together with Abraham S. Becker and issued by The Economic Growth Center, Yale University, 1968.

d. Abraham S. Becker, *Soviet National Income, 1958–1964* (Berkeley: Univ. of California Press, 1969), p. 120.

e. 1961–1964.

f. Norman M. Kaplan, "Retardation in Soviet Growth," *Review of Economics and Statistics* 50, no. 3 (Aug. 1968), and processed appendix.

g. 1961–63.

they sometimes are substantially so, so the agreement in results is more or less reassuring.

As was expected, Cohn finds that the Soviet official series shows systematically a higher rate of growth than does the composite that he compiles from his own and Kaplan's calculations. It is not very surprising either, though certainly illuminating, that the gap between the Soviet official and the Cohn-Kaplan tempos is narrower since 1950 than it was in prewar years; or that disaggregation shows that the principal cause of the decline by far is a sharp reduction in the "net output gap." National income is calculated in both the Soviet official and Cohn-Kaplan series through the aggregation of measures of the physical volume of output in

different sectors. The "net output gap" is that part of the difference between the two series that is imputable to divergencies in such sectoral series.

Thus, as everyone agrees, a major cause of upward bias in the official series before the war was the notoriously defective method used to value new products in ruble prices of 1926/27, the valuation year for the prewar series. That deficiency was only compounded by the relatively large volume of new products produced and the inflationary price trends of the time. Since 1950, such bias should be much reduced, if for no other reason than because of successive shifts in valuation years made beginning with the data for 1950, the relative reduction in the volume of new products and the emergence of deflationary price trends (all Chapter 5 above, under the heading "Deflators"). The bias due to improper valuation of new products must be a principal cause of the "net output gap" considered by Cohn. The reduction in such bias accordingly must be a principal reason for the reduction in that gap.

It was not entirely to be anticipated, though, that for postwar years the "net output gap" would be discounted as far as it is by Cohn, to a share in the total gap more or less comparable to those of the other two component gaps he distinguishes: the "coverage gap" and the "weighting gap." Among Western students of the Soviet economy, it has been widely assumed that, even though much reduced in importance, new-product valuation bias remains by far the principal source of inflation in the Soviet official growth rate. Since an alternative calculation made by Cohn himself suggests that this is indeed the case, further research may be in order on this question.

Cohn also finds that the gap between the Soviet official and Cohn-Kaplan tempos tends to decline within the postwar period considered, 1950–66. Indeed, for 1961–66 the excess of the Soviet official over the Cohn-Kaplan growth rate falls to 0.9. At this point, one wonders whether the Soviet statisticians may not be as accurate as Cohn and Kaplan. In any event, if we take the latter as standard throughout, a continual improvement in the accuracy in the Soviet official series is apparent. What is the explanation?

Cohn's inquiry, I feel, is especially useful so far as it illuminates further this interesting question. Apparently all three component gaps tend to narrow with the total divergence in the course of time, but they fluctuate markedly. That is not always surprising in view of the nature of the component gaps, but the analysis at this point seems only to call for still further inquiry into the deeper causes affecting the different gaps since 1950. Without such inquiry it is hazardous to assume, as one might be tempted to do, that the total gap will tend in future to remain as small

as it was during 1961–66. Possibly it will widen instead. By the same token, it is still early to do what one would have wished to do long ago: abandon independent computations of "real" growth of national income in the USSR and rely instead on the official data.

As is well known, Soviet official data on national income have been criticized not only by Western scholars but by some Soviet scholars. The late A. L. Vainshtein, one of the best known of the latter, as Cohn points out, in 1969 argued that for years after 1950 Soviet data on national income in current rubles were, if anything, more indicative of "real" trends than were the corresponding data in constant rubles—this despite the fact that the current ruble data showed less growth than did those in constant rubles. Actually, Vainshtein himself juxtaposed the current and constant ruble data, and it is interesting to see that the discrepancy in implied growth rates is marked:[3]

Average annual rate of growth of national income, Soviet concept	
Soviet data in constant rubles	8.9
Soviet data in current rubles	6.6

Moreover, the growth rate indicated by the current ruble data fits in rather well with Western calculations of growth of "real" national income (Table 6.1). Use of current ruble data to indicate growth in "real" output, however, is obviously intended by Vainshtein only as a practical expedient, and the agreement with Western data here must be seen in a similar light to the like correspondence in the case of the Mikhalevskii-Solov'ev calculations, about which Cohn cautions us.[4]

3. A. L. Vainshtein, *Narodnyi dokhod Rossii i SSSR* (Moscow, 1969), pp. 132–33.

4. One wonders whether, in accepting the Soviet current ruble data as measures of real growth, Vainshtein himself might not have been influenced by Western calculations. He was familiar with at least some of the Western work on Soviet national income.

III

Industry Statistics

7

Rush V. Greenslade

Industrial Production Statistics in the USSR

Soviet output statistics appear in both commodity series in physical units and aggregative-value series in fixed prices for industries or groups of products. The official index of gross value of output (GVO) provides comprehensive coverage of industrial output. However, it has major deficiencies in method of construction, such as double counting and inconstant price weights, which reduce its usefulness both for international comparison and for internal planning. No other comprehensive set of constant-price value series or weighted physical indexes appears to be assembled by Soviet official agencies. For a very few classes of products, series on value of output have been published which seem to avoid the secondary products and double-counting problems of the official gross-value indexes. However, there is no evidence that these are assembled for all branches of industry, nor is there any discussion of their method of construction or use. Net-value indexes have been proposed by Soviet economists, but none has been published except for industry as a whole. There is no indication that net-value indexes have been calculated systematically by branch of industry.

The only alternative measures of industrial output as a whole and of branches of industry are the value-weighted sample indexes that have been constructed by Westerners from the announced output series in physical units. The data for a sample quantity index for the postwar period first became available in *Narodnoe khoziaistvo* (*Narkhoz*) in 1956 and in *Promyshlennost' SSSR*, published in 1957. In the postwar as well as in the prewar period, no sample index has matched the rate of growth of the official gross-value index. This divergence of the two indexes persists today, despite the appearance of additional data since 1957 in subsequent editions of *Narkhoz* and in the *Promyshlennost'* of 1964. These new data, in the form of a few added physical series, more detailed breakdowns, and further information on the weighting, coverage, and components of the GVO index, have not narrowed or reconciled the gap significantly. The additions have been marginal, and the major uncertainties persist. That is to say, although we may be convinced that the GVO index overstates industrial growth, we cannot be very sure

of the magnitude of the overstatement or of its precise causes. Conversely, we know what products are missing from the physical sample of products, but we cannot confidently judge how much difference the omissions make. As has been the case for some years, we must argue intuitively about a range of values which are suggested but not firmly anchored by the GVO index on the high end and a sample index on the low end. Beyond that, we can attempt to test the consistency of the GVO indexes with other official statistics, such as the few value-of-output series, investment in equipment, and the industry portion of national income.

The only major new development in Soviet industrial statistics in recent years is the appearance of data from the input-output tables for 1959 and 1966. These data have considerable potential for throwing light on industrial production, its structure, size, and trends. However, they are still in the process of decipherment and development, and I do not attempt to discuss them in this chapter. Nor do I attempt to discuss the coverage, detail, or quality of Soviet reporting of physical output, since there does not appear to be any significant change in this area since the exhaustive study by Gregory Grossman in 1960.[1]

For comparison with the official gross-value index this chapter presents a value-added weighted index of civilian industrial production. This is a revised and updated version of the index that was published in the Joint Economic Committee volume, *Dimensions of Soviet Economic Power,* in 1962.[2] In what follows, I shall first present the comparison of the sample and GVO indexes by branch and in total. The discussion and the data are limited to the period 1950–68. I shall then describe and analyze the anatomy of each and attempt to test for biases. Finally, some comments on the usefulness of the Soviet output statistics for planning are hazarded.

Comparison of the Official GVO Indexes and the Sample Index

The GVO and sample indexes are different in coverage, weighting, classification, concept of quantity, algebraic formula, and purpose. There is no reason for the two to resemble each other closely either in the totals or in the parts. A quantitative comparison of the two is nevertheless a good way to begin an analysis of either. Table 7.1 presents

1. Gregory Grossman, *Soviet Statistics of Physical Output of Industrial Commodities* (Princeton, N.J.: Princeton Univ. Press, 1960).

2. Rush V. Greenslade and Phyllis Wallace, "Industrial Production in the USSR," in U.S., Congress, Joint Economic Committee, *Dimensions of Soviet Economic Power* (Washington, 1962), pp. 115–36.

the sample indexes for twelve branches of industry with 1955 as the base year. Table 7.2 compares the sample indexes with the GVO indexes for the eleven branches of industry for which data are regularly released by the Soviets.

Briefly stated, the characteristics of the two indexes are as follows. The sample index is based on some 350 commodity series of civilian production weighted by 1955 prices for products within branches, and the branches are weighted by 1955 value-added weights. The value-added weights are derived from wage bills, depreciation, and computed interest charges for branches classified on an establishment basis. Since the products within branches are weighted by wholesale prices, final products are selected for as many branches as possible. Inclusion of products at successive stages of production within a branch is avoided. Almost all items in the basic sample are in physical units. The only exception is chemical equipment, which was reported in tons 1950–55, and in rubles for 1955 and subsequent years.[3] For machinery two indexes are calculated—sample A, which is part of the basic sample, and sample B. Sample B is an attempt to widen the coverage of the basic sample. It differs from sample A by the inclusion of three product group series in value terms announced by the Soviets.

The official GVO index is calculated from the sum of the value of output of all industrial enterprises. The outputs are valued in "constant prices." Output includes change in inventories of goods, both finished and intermediate, produced but not yet delivered. The branch of industry indexes are based on output by establishment rather than by product.

Table 7.2 shows that the sample indexes grow more slowly than the official GVO indexes for all branches, except paper and paperboard for 1960–67. In Table 7.3, the two sets of indexes are compared again as average annual rates of growth for five-year periods. In general the gap between the sample indexes and the GVO indexes is greatest for machinery (either sample A or B), and least for nondurable consumer goods. Within industrial materials, the greatest divergence is in chemicals, the closest agreement in ferrous metals and paper and paperboard. In general, the two indexes are closest for the five-year period, 1956–60, although those for non-durable consumer goods are closest for 1961–65. For the whole period, the difference between the overall index with machinery sample B and the GVO index is 1.9 percentage points.

The branch of industry weights for the two indexes are quite different. The official GVO index is, in effect, weighted by the sums of gross value of output of the enterprises in each branch. These gross outputs in rubles are not systematically reported by the USSR. However, reasonable

3. *Promyshlennost'*, 1957, p. 213, and 1964, p. 261.

Table 7.1. USSR: Indexes of civilian industrial production 1950–68

	1955 Value added weights (Percent)	*1950*	*1951*	*1952*	*1953*	*1954*	*1955*	*1956*	*1957*
Industrial materials	54.3	60.4	68.4	74.5	80.8	89.6	100.0	108.6	119.1
Electric power	4.1	54.0	61.5	70.3	79.4	88.7	100.0	112.7	123.4
Coal products	10.5	66.9	72.5	77.2	81.7	88.8	100.0	109.5	118.1
Petroleum products	3.2	57.2	63.9	71.2	79.7	89.8	100.0	119.0	140.1
Ferrous metals	8.7	57.2	66.4	74.4	82.4	90.3	100.0	107.9	115.2
Nonferrous metals	4.8	51.9	58.9	68.3	76.2	83.3	100.0	104.1	112.8
Forest products (sample)	12.6	70.0	80.2	82.6	85.7	94.8	100.0	103.1	109.9
Paper and paperboard	0.9	62.3	69.8	77.1	87.1	95.7	100.0	107.9	117.4
Construction materials	5.2	46.5	54.8	63.1	71.9	83.5	100.0	114.2	137.7
Chemicals	4.3	57.4	64.9	70.9	78.3	87.8	100.0	110.9	121.6
Machinery (sample A)	19.0	68.5	66.5	67.2	76.8	86.6	100.0	116.8	132.2
Machinery (sample B)	19.0	60.0	58.4	62.2	72.8	83.9	100.0	117.2	134.6
Consumer durables	2.0	29.0	37.2	42.5	53.0	78.3	100.0	117.9	135.2
Producer durables (sample A)	17.0	73.2	70.0	70.2	79.6	87.7	100.0	116.7	131.8
Producer durables (sample B)	17.0	63.7	61.0	64.5	75.2	84.6	100.0	117.1	134.5
Consumer nondurable goods	26.7	62.3	73.2	78.0	85.9	93.6	100.0	108.4	116.0
Light industry	14.9	61.7	73.8	77.5	84.6	94.3	100.0	106.7	113.7
Food industry	11.8	63.0	72.4	78.6	87.5	92.6	100.0	110.6	119.0
Civilian industrial production (with machinery sample A)		62.5	69.3	74.0	81.4	90.1	100.0	110.1	120.7
Civilian industrial production (with machinery sample B)		60.8	67.8	73.1	80.6	89.6	100.0	110.2	121.2

estimates can be made for the year 1960. These estimated values are shown in Table 7.4,[4] along with 1960 value-added weights and 1955 value-added weights moved forward to 1960. The gross output for machine-building and metalworking (MBMW) includes production of military equipment.[5] The sample index excludes military equipment; hence the weights used also exclude military equipment.[6] Weights for 1955 which included value-added in the production of military equipment, that is, all value added in MBMW, are also shown in Table 7.4 to facilitate comparison with the GVO weights.

The gross values by branch include turnover taxes charged within

4. See the Appendix for the derivation of estimated GVO and value-added weights.

5. Gosplan USSR, *Metodologicheskie ukazaniia k sostavleniiu gosudarstvennogo plana razvitiia narodnogo khoziaistva SSSR* (Moscow, 1967), p. 23. This source states explicitly that military production is included in the national economic plan.

6. The military portion of machinery output has been estimated at 50 percent in 1955. See Greenslade and Wallace, "Industrial Production."

1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
131.9	145.5	155.8	166.4	178.0	189.3	202.4	216.7	230.2	245.7	258.0
138.5	155.7	171.6	192.5	217.1	246.5	268.5	295.5	318.1	342.5	372.7
126.6	130.1	133.1	133.0	136.3	140.3	145.9	152.3	155.2	158.6	159.5
160.9	184.1	209.6	235.9	266.4	296.9	323.0	352.0	383.8	418.2	448.1
123.7	135.5	147.4	161.0	174.8	186.6	201.6	216.4	232.9	248.3	264.2
117.8	133.0	141.5	162.9	171.6	186.0	196.6	212.7	232.9	256.1	280.0
121.1	134.2	134.6	134.4	137.0	141.7	146.4	145.1	142.9	146.5	147.9
125.4	131.1	137.0	145.2	155.3	164.1	176.3	198.9	219.8	237.8	249.8
167.0	197.0	227.2	251.7	273.3	287.6	306.1	334.7	366.2	394.1	410.8
139.7	153.3	168.2	181.8	199.8	213.5	238.4	271.3	297.3	329.3	344.9
138.2	147.4	164.4	183.9	205.0	216.7	228.8	242.6	260.1	271.8	288.5
147.1	156.6	178.2	202.6	228.3	247.3	262.2	280.2	307.8	329.2	358.1
158.6	179.6	198.0	217.8	229.2	254.8	285.6	327.1	396.3	448.1	522.3
135.7	143.6	160.4	179.8	202.1	212.1	221.9	232.4	243.8	250.7	260.5
145.7	153.9	175.8	200.7	228.2	246.4	259.4	274.6	297.2	315.0	338.4
124.8	134.6	140.2	148.0	155.1	157.2	164.4	178.0	186.8	199.5	209.7
123.0	131.3	139.0	143.5	149.4	152.7	159.1	162.8	174.9	187.2	197.6
127.0	138.6	141.8	153.7	162.3	163.0	171.1	197.1	201.8	215.0	225.0
131.2	142.9	153.3	164.8	177.0	185.9	197.3	211.3	224.3	238.3	250.9
132.9	144.7	155.9	168.4	181.4	191.7	203.6	218.4	233.4	249.2	264.1

industry. These are largely in light and food industry and account for the very large gross-value weight in these branches, more than twice the value-added weight (in percent). Because of the large gross-value weight in light and food industries which are slow growing, the difference in weighting does not help to explain the faster rate of growth of the overall GVO index compared with the sample index. The value-added weights for total industry in Table 7.4, when applied to the GVO branch indexes, produce an even faster rate of growth (10.7 percent against 10.5 percent for 1950–67).

The 1955 value-added weights have been modified somewhat from those used in *Dimensions*[7] to reflect later information on employment, average earnings, and capital stock. For comparison, 1960 value-added weights for civilian industry are also shown in Table 7.4. The index number effect, resulting from the shift from 1955 to 1960 value-added weights,

7. Ibid.

Table 7.2. USSR: Comparison of sample indexes and official Soviet indexes of industrial production (1960 = 100)[a]

	1950	*1951*	*1952*	*1953*	*1954*	*1955*	*1956*	*1957*
Industrial materials								
Sample index	39	44	48	52	58	64	70	76
Official Soviet[b]	34	39	44	48	54	61	66	73
Electric power								
Sample index	31	36	41	46	52	58	66	72
Official Soviet	27	32	36	41	47	54	61	68
Fuels								
Sample index	43	47	50	54	59	66	74	82
Official Soviet	41	45	50	54	59	67	71	77
Ferrous metals								
Sample index	39	45	50	56	61	68	73	78
Official Soviet	37	43	49	54	59	65	72	77
Nonferrous metals								
Sample index	37	42	48	54	59	71	74	80
Official Soviet[c]	34	39	46	52	59	66	71	76
Forest products								
Sample index	52	60	61	64	70	74	77	82
Official Soviet	47	53	55	57	64	69	73	78
Paper and paperboard								
Sample index	45	51	56	64	70	73	79	86
Official Soviet	41	47	52	59	66	70	76	83
Construction materials								
Sample index	20	24	28	32	37	44	50	61
Official Soviet	18	23	26	30	35	42	47	59
Chemicals								
Sample index	34	39	42	47	52	59	66	72
Official Soviet	25	31	36	41	46	56	63	71
Glass and porcelain								
Official Soviet	27	31	35	39	46	54	61	69

which is shown in Table 7.5, is very slight. However, it must be remembered that 1955 wholesale prices are used in both cases within branches.

The Sample Index

The weaknesses of the sample index are first and foremost the incompleteness and unassessable representativeness of the sample; second, the absence of value-added weights within branches, particularly within the machinery sector; and third, the use of value-added weights based on an establishment (and essentially ministerial) classification rather than on a product classification. Finally, there are measurement problems that would affect the sample index and the official GVO index equally. These concern the consistency of prices used to value products and the constancy of physical characteristics of the products (i.e., quality).

Turning first to these latter problems, we find the situation regarding quality not significantly changed since earlier studies.[8] There are any

8. Grossman, pp. 123–34.

1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
85	93	100	107	114	122	130	139	148	158	166
82	90	100	109	118	130	141	154	167	181	195
81	91	100	112	127	141	156	172	185	200	217
77	89	100	112	127	144	160	178	194	211	233
89	95	100	104	110	117	124	132	138	145	150
86	93	100	105	111	120	129	137	145	155	162
84	92	100	109	119	127	137	147	158	168	179
83	91	100	108	118	127	137	147	158	169	179
83	94	100	115	121	131	139	150	165	181	198
84	91	100	113	125	137	150	170	190	208	225
90	100	100	100	102	105	109	108	106	109	110
86	95	100	104	109	115	121	125	129	137	143
92	96	100	106	113	120	129	145	160	174	182
89	93	100	106	114	122	132	146	159	174	188
74	87	100	111	120	127	135	147	161	174	181
71	84	100	112	121	130	141	153	168	184	199
83	91	100	108	119	127	142	161	177	196	205
80	89	100	113	130	151	173	195	220	249	279
78	89	100	112	124	134	150	161	176	194	214

number of reports in the Soviet press of lapses of quality in particular products, and of a general deficiency in quality control. However, there is no evidence of a continuous change in quality or measurable swings back and forth. Possibly, after the substantial growth of unsalable consumers' goods in the earlier 1960's and the subsequent campaigns to remedy the situation, some improvement in design of clothing took place.

The question of prices used in the weights is more complex. In general, prices in the USSR in 1955 covered costs plus a small profit mark-up, but in some cases they also involved arbitrary subsidies or exceptionally large profits. There does not appear to be any consistent bias arising from prices except in the case of temporary prices on new products. Those prices are likely to be relatively high, but they may be the only ones available for some of the new products that are entered into the sample indexes. In sample A, new products are added in agricultural machinery, which is discussed in more detail below. In sample B, which includes

Table 7.2 (continued)

	1950	*1951*	*1952*	*1953*	*1954*	*1955*	*1956*	*1957*
Machinery								
Sample index (with machinery sample A)	42	40	41	47	53	61	71	80
Sample index (with machinery sample B)	34	33	35	41	47	56	66	76
Official Soviet	23	28	32	37	43	52	59	67
Nondurable consumer goods								
Sample index	44	52	56	61	67	71	77	83
Official Soviet[d]	42	49	53	58	65	69	76	82
Light industry								
Sample index	44	53	56	61	68	72	77	82
Official Soviet	40	48	52	57	65	71	77	81
Food industry								
Sample index	44	51	55	62	65	71	78	84
Official Soviet	43	49	53	59	65	68	75	82
Total civilian industrial production								
Sample index (with machinery sample A)	41	45	48	53	59	65	72	79
Sample index (with machinery sample B)	39	43	47	52	57	64	71	78
Official Soviet (includes military production)	33	38	43	48	54	61	67	74

a. The sample indexes are the indexes presented in Table 7.1 shifted to a 1960 base; unless otherwise noted, the official Soviet indexes are the indexes of gross value of output (GVO) reported by TsSU in its statistical handbooks, *Narkhoz* (various years) and *Promyshlennost' SSSR*, 1957 and 1964.

b. The indexes of GVO for the branches in the industrial materials sector have been combined using estimated GVO in 1960 as weights (see Table 7.9). The glass and porcelain industry, for which no sample index was prepared, has been included in the industrial materials index.

several announced aggregative value of product series, the temporary price problem may be significant, giving an upward bias to the index.

Value-added on a product classification basis cannot be estimated for 1955. However, it can be constructed for 1959 from the employment and capital stock data published in connection with the 1959 input-output table. Table 7.6 compares product class value weights for 1959 with establishment class weights for 1960. The change to product classification weights has a very small effect on the index, as shown in Table 7.6.

The absence of value-added weights within branches of industry is counteracted by selecting for the sample index final products within branches, where possible, or netting out the raw material or intermediate goods from the final product if successive stages of production are included. Thus the value of crude oil used in refining is netted out, since the value of refined products is included, and the cement input is netted out of precast concrete. Intermediate food products are netted out of many final foods, for example, flour out of bread, and meat out of canned

1958	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
84	90	100	112	125	132	139	148	158	165	176
83	88	100	114	128	139	147	157	173	185	201
76	87	100	115	132	150	164	179	201	225	252
89	96	100	106	111	112	117	127	133	142	150
87	95	100	106	112	116	120	128	137	149	160
89	94	100	103	107	110	115	117	126	135	142
87	94	100	104	107	109	113	113	124	137	149
90	98	100	108	114	115	121	139	142	152	159
87	96	100	107	116	122	126	142	149	161	170
86	93	100	108	115	121	129	138	146	156	164
85	93	100	108	116	123	131	140	150	160	169
82	91	100	109	120	129	139	151	164	180	195

c. Until 1959 the official Soviet index of GVO for nonferrous metallurgy was published in the statistical handbooks. Index numbers for 1959–63 were obtained from Soviet collateral sources: N. M. Oznobin, ed., *Ocherki po sovremennoi sovetskoi i zarubezhnoi ekonomike* (Moscow, 1967), p. 115; *Voprosy ekonomiki* 1969, no. 10, p. 92. The index numbers for 1964–68 were computed from growth rates reported in annual plan fulfillment reports for the GVO of ferrous and nonferrous metallurgy combined, by using the gross value weights in Table 7.9 to obtain the GVO of nonferrous metallurgy as a residual.

d. The indexes of GVO for the light and food industries have been combined, using estimated GVO in 1960 as weights (see Table 7.9).

meat. Similarly in light industry, cloth is netted out of garments. The most serious absence of value-added weights is in machinery. Some branches of machine building are more completely represented than others; they are aggregated into an overall machine building index by the sum of the sample values.

The completeness and representativeness of the sample are crucial.[9]

9. The basic sample was described in Greenslade and Wallace, pp. 131–34. The sample including machinery, sample A, differs from the sample there described in the following ways.

A. Ferrous metals consist of 13 types of rolled products, steel for castings, iron ore and pig iron exports, instead of simply crude steel.

B. Rubber tires have been added to the chemicals sample.

C. A furniture series, aggregated from physical data, has been added to forest products.

D. Civilian aircraft has been dropped, since it is erratic and the estimating method tenuous.

E. Consumer electronics (television sets and radios) replace all electronics, since the Soviets stopped publishing data on tubes and semiconductors.

The product samples in fuels, electric power, and ferrous metals are nearly complete as compared to the defined product content of the branches. In construction materials the sample is a very large part of the total. In forest products, paper and paperboard, and nonferrous metals, the samples are progressively smaller portions. In chemicals and in machinery, the samples are smaller yet. In light and food industries the samples are reasonably complete. But in many of these industries the samples do not reflect changing product assortment over time.

Quantitatively the worst divergences in rates of growth between the sample and GVO are in wood products, nonferrous metals, chemicals, and machinery. In these branches, the product sample may be open to suspicion. The slow growth of the sample forest products index may be due to the absence of many fabricated wood products such as doors and window frames, and to lack of detail in the furniture sample. The furniture sample consists of five categories not broken down: tables, chairs, upholstered chairs, sideboards, and wardrobes. Nearly half of the difference in growth rate between GVO and the sample index can be closed by substituting a published series on value of furniture produced. However, the price problems in that series are substantial (see below, the paragraph associated with note 23).

In nonferrous metals the sample covers the six major metals, in primary form. Rolling and finishing of various kinds are not reflected. It is likely that the trend toward more finishing may go on in nonferrous metals industry, as in the U.S. industry, and also as in ferrous metals in the USSR. In ferrous metals this trend increases the index by ½ percent per year (for 1950–61). The difference between the sample and GVO nonferrous metals indexes is 1.4 percentage points per year (1950–68).

In chemicals, the sample of twenty-three items consists, not of individual products, but of product groups such as plastics, synthetic fibers, mineral fertilizers, etc., which provide a substantial coverage of the aggregate value of the industry. However, here too the product groups may screen a considerable increase in diversity and additional processing, and hence the index may be understated.

The machinery sector is the largest contributor to the divergence of the overall indexes, accounting for nearly two-thirds of the difference for

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For sample B, the following constant price value series are added or substituted:

A. Equipment for consumer goods industries (announced value series).

B. Instruments, including electronic instruments (announced value series).

C. Agricultural equipment (announced value series) replaces the sample of products in sample A.

The values of the new series for sample B are simply added to the ruble value of the physical products valued at wholesale prices in sample A. The wholesale value of producer durables samples A and B are shown in Table 7.7.

Table 7.3. USSR: Average annual rates of growth of industrial production, 1951–68; sample and official soviet indexes[a]

	1951–68	*1951–55*	*1956–60*	*1961–65*	*1966–68*
Industrial materials					
Sample index	8.4%	10.6%	9.3%	6.8%	6.0%
Official Soviet	10.2	12.4	10.4	9.0	8.2
Electric power					
Sample index	11.3	13.1	11.4	11.5	8.0
Official Soviet	12.7	14.9	13.1	12.2	9.4
Fuels					
Sample index	7.0	9.1	8.6	5.7	3.3
Official Soviet	7.9	10.3	8.3	6.5	5.7
Ferrous metals					
Sample index	8.9	11.8	8.1	8.0	6.9
Official Soviet	9.2	11.9	9.0	8.0	6.9
Nonferrous metals					
Sample index	9.8	14.0	7.2	8.5	9.6
Official Soviet	11.1	14.2	8.7	11.2	9.8
Forest products					
Sample index	4.2	7.4	6.1	1.5	0.6
Official Soviet	6.4	8.0	7.7	4.6	4.6
Paper and paperboard					
Sample index	8.0	9.9	6.5	7.7	7.9
Official Soviet	8.8	11.3	7.4	7.9	8.8
Construction materials					
Sample index	12.9	16.6	17.8	8.1	7.1
Official Soviet	14.3	18.5	18.9	8.9	9.2
Chemicals					
Sample index	10.5	11.7	11.0	10.0	8.3
Official Soviet	14.3	17.5	12.3	14.3	12.7
Machinery					
Sample index (with machinery sample A)	8.3	7.9	10.5	8.1	6.0
Sample index (with machinery sample B)	10.4	10.8	12.2	9.5	8.5
Official Soviet	14.2	17.7	14.0	12.4	12.1
Nondurable consumer goods					
Sample index	7.0	9.9	7.0	4.9	5.6
Official Soviet	7.7	10.4	7.7	5.1	7.7
Light industry					
Sample index	6.7	10.1	6.8	3.2	6.7
Official Soviet	7.6	12.2	7.1	2.5	9.7
Food industry					
Sample index	7.3	9.7	7.2	6.8	4.5
Official Soviet	7.9	9.6	8.0	7.3	6.2
Total civilian industrial production					
Sample index (with machinery sample A)	8.0	9.9	8.9	6.6	5.9
Sample index (with machinery sample B)	8.5	10.4	9.3	7.0	6.5
Official Soviet (includes military production)	10.4	13.1	10.4	8.6	8.9

a. The base years for the calculation of average annual rates of growth are the years before the first year of the stated periods. Thus, the average annual rate of growth in 1951–68 is based on the growth between 1950 and 1968. The rates of growth of the sample indexes are calculated from the indexes presented in Table 7.1, the rates of growth for the official Soviet indexes from the indexes presented in Table 7.2. The sample indexes for machinery and total industrial production exclude military equipment, while the official Soviet indexes include military equipment.

Table 7.4. USSR: Comparison of 1960 GVO weights with 1955 and 1960 value-added weights[a]

	Overall industry[b]			
	1960 GVO weights[d]		*1955 Value-added weights moved forward to 1960 (machinery sample B)*	
	Billion rubles	*Percent*	*Billion rubles*	*Percent*
Industrial materials	47.8	31.4	17.50	47.5
Electric power	3.8	2.5	1.46	4.0
Fuels	7.8	5.1	–	–
Coal	–	–	2.90	7.9
Petroleum products	–	–	1.38	3.7
Ferrous metals	8.6	5.6	2.64	7.2
Nonferrous metals	3.9	2.6	1.40	3.8
Timber, wood, paper	9.5	6.2	–	–
Forest products	8.5	5.6	3.52	9.5
Paper	1.0	0.7	.27	0.7
Construction materials	6.6	4.3	2.43	6.6
Chemicals	6.7	4.4	1.50	4.1
Glass and porcelain	0.9	0.6	–	–
Machinery	34.0	22.3	11.64	31.6[f]
Nondurable consumer goods	70.7	46.3	7.72	20.9
Light industry	35.3	23.1	4.27	11.6
Food industry	35.4	23.2	3.45	9.3
Totals	152.5	100.0	36.86	100.0

a. See the appendix of this chapter for the derivation of GVO and value-added weights.
b. Includes military equipment.
c. Excludes military equipment.
d. These values are in 1955 prices although they apply to the year 1960. Weighting the official Soviet GVO indexes by these estimated GVO weights does not reproduce the official Soviet GVO index for total industry, partly because of the rounded nature of the weights

the period as a whole. The spread in average annual rates of growth for 1960–68—sample A, 7½ percent; sample B, 9 percent; and GVO in machine-building,[10] 13 percent—qualifies as a credibility gap. The most serious omission from the sample is military and space hardware. We shall consider this problem first.

Postponing for the moment the question of new-product pricing in value series in sample B, let us test the hypothesis that arms[11] procurement may account for the difference between the sample index (including machinery sample B) and GVO for all industry. For the year 1951 there

10. Excluding metalworking and repair, which are given both separately and as part of MBMW in Soviet-announced statistics.

11. Arms should be thought of as including space equipment and also much of the development work on new kinds of equipment, e.g., design, construction, and testing of prototypes.

Civilian industry[e]			
1955 Value-added weights moved forward to 1960 (machinery sample B)		*1960 Value-added weights*[e]	
Billion rubles	*Percent*	*Billion rubles*	*Percent*
17.50	54.3	18.957	54.7
1.46	4.5	1.573	4.5
—	—	—	—
2.90	9.0	4.012	11.6
1.38	4.3	1.217	3.5
2.64	8.2	2.806	8.1
1.40	4.4	1.356	3.9
—	—	—	—
3.52	10.9	3.695	10.7
.27	0.8	.339	1.0
2.43	7.5	2.453	7.1
1.50	4.7	1.506	4.3
—	—	—	—
6.99	21.7	7.439	21.5[f]
7.72	24.0	8.253	23.8
4.27	13.3	4.643	13.4
3.45	10.7	3.610	10.4
32.21	100.0	34.649	100.0

and index numbers and partly because about 2 percent of total industrial GVO in 1960 (155.2 billion rubles) is not accounted for. In addition, it has not been possible to verify the validity of these weights. Thus, growth of the official GVO for total industry averages 10.4 percent annually during 1951–68; growth of this portion of GVO averages about 10 percent.

e. In 1960 prices.

f. Military equipment is assumed to be 40 percent of total machinery in 1960.

was no growth in machinery sample B; and in GVO, for machine building the growth was 21 percent. It is plausible that a large part of this difference and hence the difference between the overall indexes—10 percent for the sample index and 15 percent for the GVO index—was brought about by the requirements of the Korean War. For the growth from 1950 to 1951 the hypothesis is not refuted. From 1951 to 1960, the overall sample index grew about 9½ percent per year and GVO at 11½ percent. From 1960 to 1968 the sample index grew at 6.8 percent per year and GVO at 8.7 percent. The hypothesis requires that arms production grew more rapidly than civilian production in both periods. I take it that arms production grew relatively slowly in the aftermath of the Korean War from 1951 to 1960, and then more rapidly after 1960 when missiles and other advanced weapons entered into service at a rapid rate. Thus,

Table 7.5. USSR: Comparison of average annual rates of growth of civilian industrial production using 1955 and 1960 value-added weights

	1951–68	*1951–55*	*1956–60*	*1961–65*	*1966–68*
Industrial materials					
1955 weighted sample index	8.4	10.6	9.3	6.8	6.0
1960 weighted sample index	8.1	10.4	9.0	6.5	5.7
Machinery					
Sample A					
1955 weighted sample index	8.3	7.9	10.5	8.1	6.0
1960 weighted sample index	8.2	7.7	10.4	8.1	5.8
Sample B					
1955 weighted sample index	10.4	10.8	12.2	9.5	8.5
1960 weighted sample index	10.4	10.7	12.2	9.5	8.5
Nondurable consumer goods					
1955 weighted sample index	7.0	9.9	7.0	4.9	5.6
1960 weighted sample index	7.0	9.9	7.0	4.8	5.7
Total civilian industrial production					
With machinery sample A					
1955 weighted sample index	8.0	9.9	8.9	6.6	5.9
1960 weighted sample index	7.9	9.7	8.8	6.5	5.7
With machinery sample B					
1955 weighted sample index	8.5	10.4	9.3	7.0	6.5
1960 weighted sample index	8.4	10.3	9.1	6.8	6.5

arms production would have the greatest upward effect on the index, if it had any at all, since 1960. However, according to an estimate by Becker, Moorsteen, and Powell, the growth of output of the munitions industry was an average annual rate of 6.8 percent for 1961–66, the same as the rate of growth of the sample index for all civilian industry.[12] In the U.S., in the great expansion of defense spending from 1960 to 1967, production of arms grew at about 7 percent per year.[13] Thus, judging by these calculations, the addition of arms production would not change the growth of the sample index in the period 1960 to 1967 and would reduce it in the period 1951 to 1960, thus leaving the divergence from GVO even greater.

The argument above does not rule out the possibility that there may be gross statistical distortions in the measurement of the value of arms production in the GVO index. Any kinds of distortions that occur in the civilian portion of GVO are likely to occur in the military equipment part

12. Abraham S. Becker, Richard Moorsteen, and Raymond P. Powell, "1. The Soviet Capital Stock: Revisions and Extensions, 1961–67," in *Two Supplements to Richard Moorsteen and Raymond P. Powell, "The Soviet Capital Stock, 1928–62"* (Economic Growth Center, Yale University, 1968), p. 51.

13. DOD expenditure on "procurement" in *Monthly Report of Status of Funds;* expenditures of NASA and AEC from *Statistical Abstract of the United States;* price deflator on government purchases of durable goods from *Survey of Current Business* (July 1968), 1969.

Table 7.6. USSR: Comparison of establishment and I-O value-added weights

	Weights	
	1959 I-O Weights[a]	*Weights moved back to 1960 establishment 1959*[b]
Industrial materials	57.13	55.17
Electric power	5.08	4.43
Coal	12.16	12.16
Petroleum products	3.31	3.31
Ferrous metals	7.91	8.01
Nonferrous metals	4.24	3.95
Forest products	11.71	11.42
Paper and paperboard	.98	1.03
Construction materials	7.47	6.60
Chemicals	4.27	4.26
Machinery[c]	18.25	20.28
Nondurable consumer goods	24.62	24.55
Soft goods	12.77	13.61
Processed foods	11.85	10.94
Total	100.00	100.00

Average annual rate of growth of civilian industrial production, 1951–68 (percent)

I-O Weights	*Establishment Weights*
8.4	8.4

a. See Table 7.8 in the appendix of this chapter.

b. These weights were moved back to 1959 by the indexes presented in Table 7.1. The sample B index was used for machinery, but the distribution would have been almost the same if the sample A index had been used.

c. Both the I-O and establishment value-added weights for machinery have been reduced by 40 percent in an effort to exclude value-added in the production of military equipment.

as well, particularly the distortions from increasing double counting on account of the increasing complexity of advanced weapons.

Sample A suffers from the omission of fast-growing and important kinds of equipment such as industrial electronics and instruments. In addition, only motor vehicles, railroad equipment, and tractors are nearly complete series consisting of numbers of machines, by major type with corresponding average prices. Production of maritime vessels is conceptually complete, but the value of production in any year must be deduced from subsequent launchings or completions. Agricultural equipment is a large sample approaching three-fourths of the announced value total. Other important components, such as electric power equipment, machine tools, and metallurgical, petroleum, and chemical equipment, are in conventional units, such as kilowatts of capacity, number of tools by kind, or tons. For each of these, average prices must be guessed. Clearly such improvements—in complexity, diversity, or productivity of machines—as have occurred, are understated by these units of measure.

The value series in sample B, agricultural equipment, equipment for the consumer industries, instruments, and (since 1956) chemical equipment (this is also in sample A), are presumably complete. The aggregation of these ruble-value series with the physical series of machinery produces a mixture of probable understatement on account of the absence of new products and possible overstatement because of overpricing of new products. The evaluation of the net effect of this can be made only by means of quantitative evidence. In later sections of this chapter, the sample series will be compared with related Soviet and constructed series in the hope of setting some limits to the possible errors.

The major omissions in the sample should be noted. The glass and porcelain industry (including pottery and chinaware) is missing except for window glass and polished glass, which is included in the construction-materials sample. A varied and miscellaneous list of fabricated metal products other than machinery, which are classified in the Soviet branches metal products and metalworking, are omitted. These include wire, nails, nuts and bolts, tools, drums, fabricated metal structures, electrical wire and cable, electrical switch gear, cans, kitchenware, metal furniture and other metal consumers' goods. Also omitted is a category listed as "other industry" in Soviet classifications, including such things as toys and musical instruments.

Spare parts of all kinds, except where they may be included in value series, are omitted. A values series, of somewhat doubtful validity before 1958, for spare parts for trucks, tractors, and agricultural equipment can be computed from data in the annual *Narkhoz RSFSR* handbooks. This series includes only centralized production, that is, production in specialized spare-parts plants and in plants producing trucks, tractors, and agricultural equipment. Spare parts manufactured by the users of trucks, tractors, and agricultural equipment are omitted from the series. The latter were extremely important in the early fifties. The series on centralized production is therefore thought to be very unrepresentative and was not included in the sample index.[14]

Civilian aircraft is another missing item large enough to be significant. In the late 1950's civilian aircraft production must have grown very rapidly as indicated by the introduction of commercial jets and by the very rapid expansion of Aeroflot's scheduled service. There is no way of estimating aircraft production accurately, but a plausible guess suggests a series that would increase the average annual rate of growth of machinery sample B by a percentage point in the period 1956–60. After 1960 the

14. This series grew very fast in the 1950's when a considerable effort was devoted to setting up specialized plants for spare parts for trucks, tractors, and agricultural equipment. Since 1960, the series has grown somewhat more slowly than machinery sample B.

expansion of jet service slowed considerably, and it is unlikely that commercial aircraft production would noticeably affect the sample index.

The Official GVO Index

The Soviet gross value index for industrial output as currently published remains conceptually much the same as it has been for years except for periodic changes in price weights. The prices used have been, for 1949–51, current wholesale prices; 1952–55, 1952 beginning of year prices; 1955–67, 1 July 1955 prices; 1968 and thereafter, 1 July 1967 prices. Other changes such as in the pricing of new products will be discussed below.

The principal features of the index and their potential for bias will be briefly summarized.

1. The gross value of output of industry, or of a branch of industry, is the sum of the output of all individual enterprises in the branch (or industry) valued at base-year prices. Thus, the value of materials purchased outside of industry is counted, and all intermediate material purchases (sales from one industrial enterprise to another) are double-counted. Distortions may occur because the weights are gross prices (instead of value-added) and also because the degree of double counting may change as a result of more or less vertical specialization of enterprises. In some branches, including textile, fur, leather shoes, meat, sugar, and tobacco, even intraenterprise turnover is counted in gross value. On the other hand, in a few branches the trust rather than the enterprise is the reporting unit.

2. Value of output includes more than products in the usual sense. An increase in inventories of semiprocessed goods is counted, as is work of an industrial nature, including repair of equipment and structures. Beginning in 1961, most branches of machine building (those whose expenditures for mastering new products are reimbursed from a special ministerial fund for new technology) are allowed to count in gross value the expenditures for development of new products.

3. The pricing of new and unique (one-time) products has been chaotic. In the absence of a base-year price the initial selling price has been generally used to enter such products into gross-value index. The possibilities for inflation of the index by this procedure are substantial. A relatively small or nominal change in a product accompanied by a large price increase can increase value of output with no change in real output. Although the rules governing the setting of prices of new products have varied, the enterprise generally has had the responsibility for setting the price and hence of making the interpretation of the rules. The material

incentive to overstate the price of a new or unique product is universal, because of the emphasis on fulfillment of the plan for gross value (or value of sales, more recently).

4. The mirror image of the new-product price problem is the problem of product quality. A simple reduction of quality of an existing product may facilitate increased numerical production. As indicated above, there is no evidence in the postwar period of continuous widespread decline or of substantial cyclical swings in quality. This matter is discussed below in connection with machinery pricing.

5. The fact that the branch-of-industry indexes are based on an establishment classification rather than a product classification should not be a source of bias for the overall industry index. The coverage of industrial production is alleged to be nearly complete. Production of industrial enterprises in agriculture, construction, and other nonindustrial sectors is added into the appropriate industrial branches. Establishment classification has, however, a significant effect on particular branch indexes, makes international comparisons difficult, and would make planning and economic administration very haphazard if these branch indexes were used for these purposes. The establishment classification undermines any attempt to reconcile sample indexes by branch with GVO branches or GVO branches with Soviet value of product series.

The methodological deficiencies of the GVO indexes are obvious, and this fact is almost unanimously accepted by Western observers, and even, explicitly or implicitly, by many Soviet writers. It is possible to argue, on the other hand, as Soviet spokesmen occasionally do, that the degree of error is small and that the GVO index is essentially a correct indicator of the trend of industry, in spite of the methodological problems. A combination of suppressed data and obscure and incomplete discussion of procedures makes this assertion difficult to disprove conclusively, but an accumulation of indirect tests, inconsistencies, and criticism by Soviet writers lends powerful support to the hypothesis that the GVO index still significantly overstates the growth of Soviet industry.

Establishment Classification

Under the Soviet industrial organization, the secondary-product problem is serious. Tight supply conditions have encouraged enterprises to initiate production of supplies secondary to their industry on a wide front. Metal castings, nuts, bolts, and other fasteners, and spare parts are among the many products produced in large quantity outside of their primary industries. On this account alone, some published GVO indexes by branch of industry are open to suspicion. More detailed or disaggregated branches are even more suspect. A simple illustration of this is

electric-power production. Much electric power is produced by manufacturing enterprises for their own use. The effect on the GVO index is accurately explained by Revenko:

> Take, for example, the indexes for electric power. For the period 1950 through 1961, it was equal according to their [two Western economists'] calculations to 357 percent. According to the calculations of the Central Statistical Administration, the output of the branch production of electricity and heat energy grew by 4.09 times. Why is there this difference? It is known that, in accordance with Soviet practice in reporting, the gross output of industry includes only production sent outside the enterprise and does not include production consumed for the internal needs of the enterprise. In the USSR in recent years around 15–20 percent of the electric power is produced in the electric power stations of the industrial enterprise and is almost wholly used for the internal needs of these enterprises. The electric power sent outside the limits of the enterprise is included in the gross output, not of the branch "production of electric and heating energy" but of the branches of industry which the given industrial electric power plants serve. If the electric energy produced in the electric-power plants of industrial enterprises is excluded from the total output of electric energy, then the indexes of production of electric power in the USSR would rise from 359 percent to 420 percent.[15]

Thus the electric power counted in the electric power branch GVO is that which is produced by enterprises whose primary product is electric power. This is faster growing than total electric power including captive production—the power produced by a manufacturing enterprise mainly for its own use. This also contributes to the overstatement of the industry GVO index. The electric power which is a primary product is double-counted in industry GVO. The slower growing captive production is mostly not double-counted.

When the Russians decided to construct an input-output table, which requires a product classification, they had to take a sample survey to ascertain the extent of secondary products by industry. There seems to be no clear way of ascertaining from published material the degree of secondary products in the branch of industry GVO's. Judging by Soviet writings (see the passages associated with note 18 below) the most serious problem is in MBMW and ferrous metals. In the enterprises of MBMW, castings and metal products are produced that should be classi-

15. A. F. Revenko, *Sopostavlenie pokazatelei promyshlennogo proizvodstva SSSR i SShA* (Moscow, 1966), pp. 64–65.

fied in ferrous metals. Presumably the GVO indexes of both branches are affected.

Gross vs. Net Indexes

In connection with a breakdown of national income for 1958–67, the Soviets have published an index of industrial production which is conceptually a "net" index, that is, net of all material purchases (and of amortization) of enterprises. This index does not diverge significantly from the GVO index.[16] There is no explanation of the details of construction of the index nor are official breakdowns for branches of industry provided. The comparison, if valid, implies that neither gross weights per se nor changes in double counting significantly affected the index in this period.

As we saw above, the GVO weights applied to branch indexes produce a slightly slower growth than the value-added weights. However, the effect of gross weights is not fully disclosed by the branch-of-industry aggregation. Within branches it may be more important. In electronics there is reason to believe that the gross weight would exceed the net weight as a share of total. The industry is specialized by its ministerial organization. Thus the Ministry of the Electronics Industry specializes in components which it sells mostly to the Ministry of the Radio Industry and to other producing ministries. It is a reasonable suspicion that this fast-growing industry has been given undue weight in the GVO MBMW index.

In general the gross weights would tend to inflate branch indexes if the relatively faster growing products are also the most double-counted. This may also be the case in chemicals where petrochemicals, fibers, and plastics are relatively rapidly growing. In light industry, on the one hand, the double-counted raw materials grow slower, but, on the other, some intra-enterprise turnover is included.

Potentially more distorting than the size of the gross weights is the change in an industry's gross value as a result of a changing degree of specialization. One of the chronic weaknesses of Soviet industrial organization is its excessive vertical integration. A recurring plea in academic writing and in official plans is the call for more specialization in production. This official concentration was so intense during the 1950's that it led Seton, writing in 1958, to conclude that the GVO index likely was biased upward as a result of the specialization campaign after 1950.[17] Ten years later, the press propaganda is still going strong; there is very

16. *Vestnik statistiki*, 1969, no. 2, p. 80.

17. F. Seton, "The Tempo of Soviet Industrial Expansion," *Bulletin, Institute of Statistics, Oxford*, 20, no. 1 (Feb. 1958): 5.

little evidence to show that it has had much effect. The latest and largest new establishment, the Togliatti plant for producing Fiat automobiles, will be fully integrated when completed. A typical Soviet discussion as of 1969 follows:

> Until recently the basic capital investments in the machine-building industry have gone either to build new integrated plants, with scores of basic and auxiliary shops, or to further expand the universal integrated capacity. Proper attention is not being given to the development of specialized production for the output of forged pieces, parts, and assemblies.
>
> According to the data of research conducted by the USSR Central Statistical Administration, of every 100 enterprises using articles from interbranch production, 71 enterprises manufacture iron castings for their own need, 76 enterprises make their own forged pieces, 99 enterprises their own gears, and 61 enterprises their own fastenings.
>
> In noting the shortcomings in the area of developing interbranch production, Comrade A. N. Kosygin in a report before the 23d Party Congress, pointed out: "It cannot be considered normal when many machine-building plants manufacture for their own needs an entire range of required articles, castings, forged pieces, tools, and all production fittings. Castings production in our nation is scattered over more than 3,000 shops, the predominant portion of which has a low technical level, and as a consequence of this, a high product cost. It is essential to decisively change the existing practices.[18]

It is improbable that the exhortation to specialize has had no effect whatsoever. Even though progress is evidently disappointing, there are reports of positive results. For example, specialized engine plants have been established in the motor-vehicle industry. Specialized plants for spare parts for tractors and agricultural equipment have been set up. Presumably, these sell parts for original equipment as well as for repairs. As industrial production has enlarged and diversified, some specialization must have occurred in many other industries, particularly chemicals, electronics, civilian and military aircraft, and advanced weapons.

A number of statements by Soviet writers can be found which allege or imply that increasing double counting is a source of unwarranted inflation of the official GVO index. Two of the most specific articles are worth quoting. In *Voprosy ekonomiki,* in 1967, three Soviet authors wrote:

> A concealed overstatement of the volume of gross output is explained

18. V. Goncharenko et al., *Ekonomika Sovetskoi Ukrainy,* 1969, no. 5, p. 2.

by the following basic causes. At the present time one of the most important indices of the operational efficiency of one or another branch of material production is the level of expenditures per 1,000 rubles of gross output produced by the given branch. Due to this, it often happens in practice that in order to raise this index the volume of gross output is artificially increased, while the branch's participation in forming the final output of the national economy not only does not increase, but either remains at its former level, or is even reduced. . . .

A calculation of production volumes for gross output without taking account of its integration level impels economic organizations to the economically unjustified dismemberment and isolation of allied and industrially connected productions which produce intermediate products. A stimulus for introducing this practice is the possibility of increasing the volume of gross output almost without expenditures, and, consequently, of reducing production costs per unit of gross or commodity output. For example, at one time intermediate productions were separated from a large chemical plant in the city of Dzerzhinsk and made into isolated enterprises with an independent balance; this made it possible to double the volume of gross output in the given industrial complex and to reduce by almost one half the labor, material, and capital consumption of gross output with practically no additional expenditures.[19]

The same authors cite a reduction in the ratio of final output of the chemical industry to its gross output from .537 in 1963 to .509 in 1965.[20]

The other article is by M. Eidel'man in *Voprosy ekonomiki,* of November 1969. Comparing the results of the 1966 input-output table with that of 1959, he writes:

> This was connected with an increase in the consumption—in machine building—of finished parts and items received on a cooperative basis and in the form of component elements, and with a decrease in the amount of metal used in machines and equipment. Internal turnover in machine building increased during the seven-year period by a factor of 1.5 [from 32 percent of material expenditures to 48 percent], attesting to the considerable development of specialization and cooperation in this leading branch of the national economy.[21]

A comparison of an index of value of final output of a branch compared

19. L. Kochetov et al., *Voprosy ekonomiki,* 1967, no. 11, pp. 32, 34.
20. Ibid., p. 37.
21. M. Eidel'man, *Problems of Economics,* 12, no. 10 (Feb. 1970): 47; also *Voprosy ekonomiki,* 1969, no. 9.

with the branch's GVO would throw light on the trend in specialization, provided the coverage of products were the same for the two indexes. Unfortunately, the classification of the few value-of-product indexes which exist, whether establishment or product, is not disclosed. In addition, it is not certain that these series include only final output of the product classes. Apparently they are by product and hence may diverge from a similarly labeled GVO on an establishment basis. For what it is worth, there are three industries for which both types of indexes have been published, (see table below).[22]

Equipment for the food industry	*1958*	*1964*
GVO	100	226
Value of output (in 1955 prices)	100	154
Instruments	*1958*	*1967*
GVO	100	410
Value of output (in 1955 prices)	100	329
Furniture		
GVO	100	175
Value of output (in 1955 prices)	100	192
Sample index (excluding metal beds)	100	172

In the case of furniture where value of output grows faster than GVO, it is known that a great deal of metal furniture is produced in a variety of MBMW enterprises. On the other hand, production of metal beds in number of units, as reported, actually declines from 1958 to 1962. In this case the value series is hard to understand; some of the explanation may lie in the pricing practices peculiar to the industry.[23]

One other hybrid comparison can be made from the indexes for tractors and agricultural equipment (see below).

	1960	*1967*
Tractors and agricultural equipment, GVO	100	225
Tractors, sample index	100	169
Value of agricultural equipment	100	203
Value of spare parts for motor vehicles, tractors, and agricultural equipment	100	157

All these cases except furniture support the proposition that the GVO

22. Data are taken from *Narkhoz* of the appropriate year unless otherwise noted.
23. S. G. Stoliarov, *O tsenakh i tsenobrazovanii v SSSR* (Moscow, 1969), pp. 35–37.

may be overstated as a result of increased double counting. These four industries, and a few others in light industry, with their wayward and conflicting production measures suggest the difficulties that Soviet planners and economists themselves must experience in attempting to analyze industrial results, particularly from a cost-accounting point of view. The published number of value series, that is, product classes expressed in rubles, has been increasing in recent years. There are now thirteen of these, with some series subdivided into components. The list includes instruments, chemical equipment, agricultural machinery, equipment for the paper industry, for textile industry, for food industry, for trade and public dining, for welding, polygraphics equipment, dyeing-decorating equipment, sewn articles, cultural goods, and furniture. Considering the many deficiencies of the indexes of GVO, value series corrected for secondary products and relieved of double counting should be a very useful set of measures for planning and analytical purposes. The growing number of published series perhaps reflects a response to demand. However, we have no indication of the number or coverage of unpublished series that may exist.

A further indicator is provided by a comparison of final sales of MBMW with GVO. Final sales indexes in constant prices were published by Eidel'man for 1963 over 1959.[24] The index of final sales for MBMW was 154. GVO for 1963 over 1959 is 172. If this discrepancy were explained by the substantial volume of secondary production in MBMW (more than 10 percent), it would imply a very rapid growth of the latter. However, the secondary products in MBMW are mostly materials, e.g., metal castings and forgings, and nuts and bolts. The metal consumer goods, like pots and pans and metal furniture, would presumably be secondary to machine-building, but not to the metalworking part of MBMW. It seems very unlikely that the materials production in MBMW would grow faster than final output. The explanation of the divergence would appear to be the gross weights (including increasing specialization) in GVO or, which seems unlikely, the GVO prices vs. final sales prices.[25] The price problem is discussed at length below.

GVO can be tested indirectly by comparing the production of producer equipment against the equipment component of investment minus net imports. The portion of GVO which is producers' equipment is not published. The comparison is therefore made against the sample index for producer durables in the two alternatives shown in Table 7.1. In-

24. M. R. Eidel'man, *Mezhotraslevoi balans obshchestvennogo produkta* (Moscow, 1966), p. 369.

25. I leave aside, with reluctance, the explanation that all Soviet production data are random, unfathomable, or capricious—what Grossman refers to as the "nihilist" position (Grossman, p. 126).

vestment equipment is modified slightly to approximate production. First, a one-year lag between production and installation is assumed and then net imports converted to domestic rubles are subtracted from investment. The ruble values and indexes are shown in Table 7.7 below. The indexes are compared in the accompanying chart.

Sample A falls short of the Soviet announced equipment series. However, sample B shows a surprisingly close approximation to the Soviet series after 1953. I conclude from this that the coverage of sample B is not seriously inadequate and that, given the assumption that military equipment has not grown faster than civilian machinery, the excess of the index of GVO for MBMW over sample B (since 1953) is mostly explained by the overstatement of GVO on account of gross weights and increasing double counting.[26]

Machinery sample B, with its value indexes, is subject to the new-product price problem just as are the investment equipment and GVO indexes. This problem is considered below.

The Definition of Industrial Activity

Activities included in the Soviet GVO of industry that are not normally included in Western indexes owe their presence in part to the Soviet government's desire to make industry seem as large as possible and in part to the eccentricity and inefficiency of Soviet industrial management. In general, these inclusions represent opportunities for the inflation of enterprise GVO's. The overall effect is hard to assess but probably is not large.

Changes in inventories of the final product of an enterprise should properly be counted in industrial output. Whether changes in inventories of goods in process should be included as they are in GVO, e.g., auto fenders, is doubtful. Since the measure of output was, before the reform of 1965, also the measure of the enterprise's success, the definition of output strongly influenced the composition of output. Increases in inventories probably have not influenced overall industry or branch of industry trends very much, but may have helped individual enterprises marvelously at critical periods.

The inclusion of "mastering new products," the research and development expenditures, in the GVO of many enterprises of machine building raises the question of how the activities are measured. Since there is no measurable output, the measure must consist of costs such as wages

26. More rigorously, the significance of this test is the implied excess of the producer durables part of MBMW over the investment equipment series. That is to say, the investment equipment series aggregated with consumer durables and an index of military equipment would not grow as fast as the MBMW GVO index.

Table 7.7. USSR: Comparison of investment in equipment with production of producer durables, 1950–68, in billions of rubles[a]

	1950	*1951*	*1952*	*1953*	*1954*	*1955*	*1956*	*1957*	*1958*
Investment in equipment[b]	2.7	2.8	3.0	3.7	4.6	5.6	6.1	7.1	7.7
Less net imports[c]	.064	.046	.055	.150	.277	.206	.171	.181	.169
Adjusted total	2.636	2.754	2.945	3.550	4.323	5.394	5.929	6.919	7.531
Index (1960 = 100)	30	31	33	40	49	61	67	78	85
Producer durables Sample A	1.804	1.724	1.728	1.961	2.159	2.464	2.876	3.248	3.343
Index (1960 = 100)	46	44	44	50	55	62	73	82	85
Producer durables Sample B	2.021	1.935	2.048	2.385	2.685	3.173	3.715	4.269	4.623
Index (1960 = 100)	36	35	37	43	48	57	67	77	83

a. Because the preponderance of producer durables manufactured in the USSR is acquired for investment purposes, the two categories may be roughly compared for consistency. The two categories are not closely matched conceptually, however, and numerous adjustments are required to make them mutually consistent. In this table the investment series (representing the use side of producer durables) has been adjusted to eliminate the effects of foreign trade in equipment, but other adjustments—addition of (i) the change in stocks of uninstalled equipment and (ii) the value of equipment used for replacement

plus material purchases. This is subject to the same objection as the use of man-hours for some industries in the Federal Reserve Board Index for the United States. Inputs are not outputs. There is no evidence as yet of the statistical effect of this practice.

More serious is the inclusion of repair activities as industrial output. The production of parts for repair is clearly industrial output. The repair activity itself is generally defined as a service. As it happens, locomotive and railroad car repair, and ship repair, became defined as industrial output in the United States. However, automobile and truck repair, repair of agricultural equipment, of construction equipment, and most of aircraft repair are services performed by service industries or by the users with purchased spare parts. The quality of Soviet equipment makes repair activities loom much larger in the USSR, and the uncertainty of service leads to much more do-it-yourself repair by equipment users involving the manufacture of many parts at great cost.

Some unspecifiable part of this repair activity is included in the Soviet classification, Repair of Machinery, which is part of MBMW and is reported as a separate index. Included in Repair of Machinery is the herculean labor of the agricultural machine–tractor stations and their successors, the Repair-Tractor Stations. The effect of this inclusion in the GVO index can be assessed. The index of Repair of Machinery since

1959	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
8.2	9.2	10.3	11.4	12.9	13.9	14.6	15.8	17.3	17.6
.110	.335	.485	.678	.649	.662	.666	.458	.553	.738
8.09	8.865	9.815	10.722	12.251	13.238	13.934	15.342	16.747	16.862
91	100	111	121	138	149	157	173	189	190
3.537	3.951	4.430	4.979	5.225	5.468	5.726	6.007	6.176	6.418
90	100	112	126	132	138	145	152	156	162
4.883	5.579	6.369	7.241	7.819	8.232	8.713	9.432	9.995	10.737
88	100	114	130	140	148	156	169	179	192

parts in repair activities—were not possible because of an insufficiency of data. The overall trend of the use (investment) series is probably not significantly affected by this omission, but individual years might vary somewhat.

b. Assumes a lag of one year between production and investment, i.e., investment shown here for 1950 is actually investment in 1951; also, the value of the official Soviet investment series was reduced by 15 percent to eliminate distribution and trade markups.

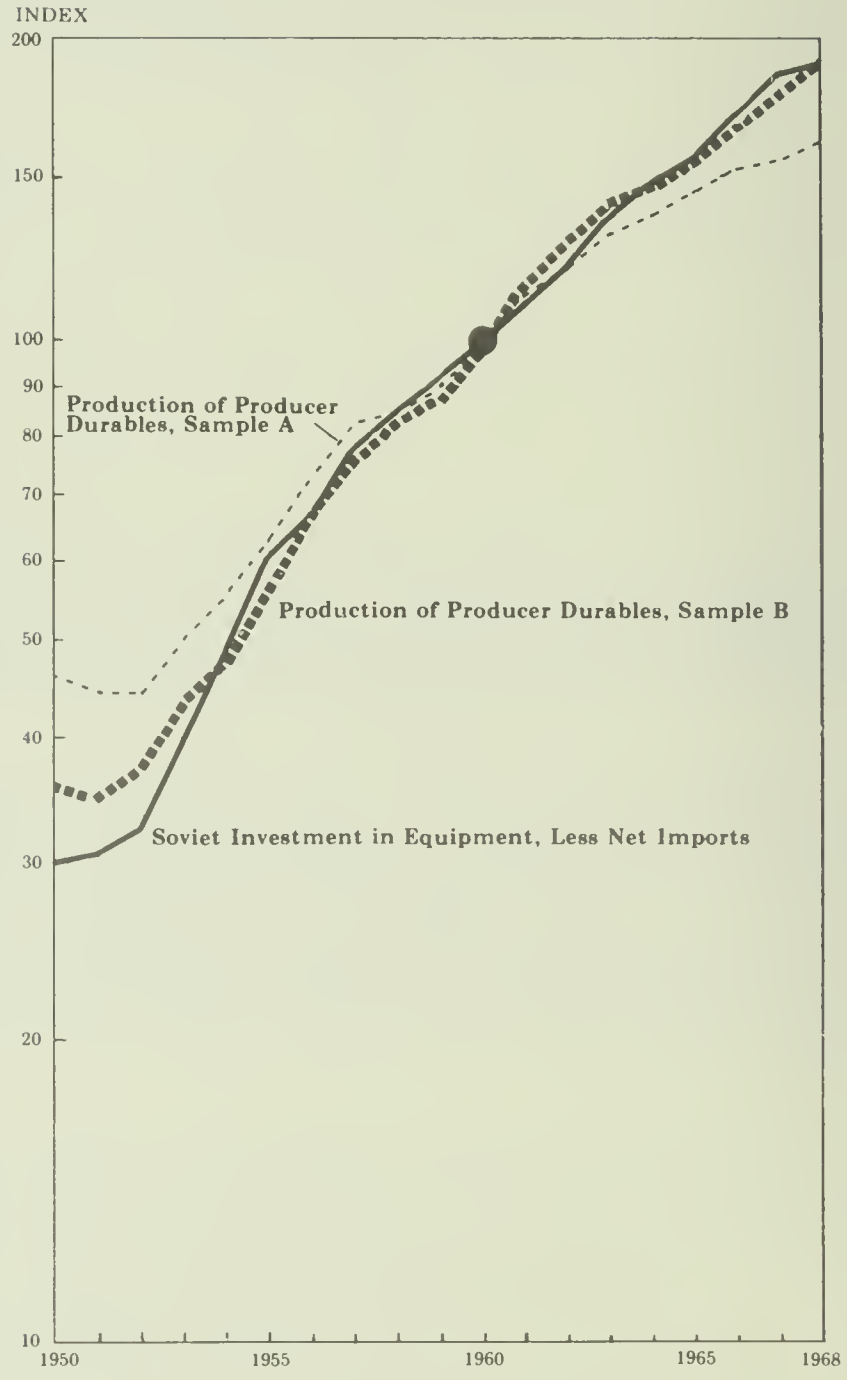
c. Foreign-trade prices have been adjusted to domestic prices, using a ratio of 1 to 0.7.

1958 is as follows: 1958 = 79, 1960 = 100, and 1968 = 221.[27] This is significantly slower than the index of GVO for MBMW as a whole and somewhat faster than machinery sample B (see Table 7.2). Since Repair of Machinery is less than 12 percent of the GVO of MBMW in 1959, as indicated by the 1959 input-output table, its inclusion would not raise the sample B index significantly. Its removal from MBMW would make the spread between the indexes of the remainder of MBMW and sample B even larger.

Pricing of New Products

The handling of new products is the problem most discussed by Soviet writers in connection with production measures. Reviewing the procedures of the 1950's, Seton concluded that since 1952 the prices of new goods would still impart an upward bias. Since 1952 enterprises were directed to inflate temporary prices to the 1 January 1952 level by the enterprise general price index. Thus decline in the price level since 1952 was counteracted. Since 1955 this practice has apparently been stopped, but by 1958 the price decline was essentially halted. The significant element here, which was preserved until 1961, was the basing of tem-

27. *Promyshlennost'*, 1964, p. 246, and *Narkhoz*, 1969, p. 255.



USSR: Comparison of Investment in Equipment with Production of Producer Durables, 1950–68

porary prices on the cost (current) of production, cost to include a maximum profit allowance of 5 percent.[28] So far as can be learned, the same procedure was used for pricing single-item orders, but without a maximum profit limit.

There seems to be no doubt that higher temporary prices provide an unjustified upward bias to the GVO index, at least in machine building. Thus, Kondrashev writes in 1963:

> According to the procedure that was in force in the recent past a temporary price for machines, units, equipment, etc., should have been in force not more than 1½ years, after which a permanent price was introduced on a lower level. But that period was almost always violated, since there was no proper control over the use of temporary prices, and the machine-building industry was interested in prolonging the period of operation of the temporary price. The fact is that in proportion to the organization of the production of a given article, the cost is systematically reduced, and the retention of a high temporary price assures great accumulations, which is not at all a matter of indifference for enterprises interested in additional means of manipulation and in credits to the enterprise fund. In addition, machine-building plants were interested in high price from considerations of fulfillment of the plan for gross output, and also because in the financial plans the profit was foreseen for them on the basis of the actual accumulations of the preceding year with the addition of the saving from the reduction of cost. Thus the objective conditions favored the prolongation of the operation of temporary prices and their overstatement.[29]

Another writer in the same year wrote:

> As is known, the indicator by which the rate of growth of production of MBMW is calculated at the present time is gross value of output in fixed prices. This indicator can be altered sometimes under the influence of a series of factors not related to the growth of physical volume of production. One of these is, for example, the systematic growth of production of new types and forms of machines and equipment. . . . In connection with this the proportion of comparable commodity production systematically was reduced and in the annual plans of machine-building plants amounts to 50 percent [for the preceding year] at the present time. At the same time,

28. A. N. Malafeev, *Istoriia tsenovbrazovaniya v SSSR (1917–1963 gg.)* (Moscow, 1964), p. 277.

29. D. D. Kondrashev, *Tsena i stoimost' v sotsialisticheskom khoziaistve* (Moscow, 1963), pp. 136–37.

> prices of new articles, especially in the period of their mastery, are established not infrequently at a high level, as a consequence of which, value of new machines in the composition of gross value of output rises faster than their physical volume.[30]

Current prices, set by the producing enterprise, were used as fixed prices for the GVO of the enterprise not only for new products but for nonserial or made-to-order products. The citation of the 50 percent proportion of noncomparable production has been repeated many times. Sitnin in 1966 stated that "almost half the *total* product [of machine building] is sold at inflated temporary prices."[31] Another source has asserted that one-third of the serial output of machine building was sold at temporary prices in 1964.[32]

Many press complaints are directed at inflated prices which lead to inflated profits. However, profits surely would not be the most important incentive, at least prior to the 1965 reform. If the new price is justified by a persistently higher cost, the GVO index may still be favorably affected. This is suggested by a body of complaints that prices are inflated in a different sense than in mark-up, that the productivity of new equipment for users has not been increased commensurately with the price. Complaints of this kind refer to a wide range of equipment, including agricultural equipment, electrical equipment, and various tools and types of industrial equipment.

The temporary prices tend to be inflated (relative to cost or productivity) and also to be retained too long. According to Kondrashev, prior to 1960 there was no clearly regulated procedure for the introduction of permanent prices to replace temporary ones:

> Under such conditions the supplier enterprises, and the Sovnarkhozes under whose authority they were, strove to preserve the temporary prices. . . . The volume of output, because of large expenditures on the organization of equipment, rose noticeably and cost was reduced, which has not always characterized actual attainments in the area of technical attainments.[33]

The implication of some writers is that the temporary prices were retained indefinitely or until the next general price reform. Thus Sitnin writes in 1967, "About 50 percent of machine building output is sold at temporary prices—a leftover from Sovnarkhoz price setting."[34] Another indication is that the value-of-product series in rubles stay unchanged

30. M. Aldosov, *Planovoe khoziaistvo*, 1963, no. 5, pp. 39–40.
31. Sitnin, *Ekonomicheskaia gazeta*, 1966, no. 43, pp. 4–5.
32. Stoliarov, p. 42.
33. Kondrashev, p. 138.
34. Sitnin, Moscow *Trud*, 13 April 1967, p. 2.

from one handbook to the next for year after year. Thus, the initial prices used to represent the "prices of 1 July 1955" for new products are retained indefinitely without change.

Apparently a surge of new-product price inflation took place under the Sovnarkhoz organization. This very likely was stimulated by Khrushchev's great campaign for modernization, adoption of new designs, improved quality, and general improvement of industrial technology as part of the Seven Year Plan. The result according to Kondrashev became "a major economic problem" which led to the decree establishing new rules, effective 1 January 1961, for financing new civilian products in MBMW.[35] The principal change in that decree was the establishment of a mastery fund based on contributions from all enterprises. Enterprises launching new products are reimbursed for their expenditures prior to beginning of series production. The intent of the fund was to cover some of the costs which formerly were recovered by the high temporary prices. This, combined with stricter rules about profits, was supposed to prevent excessive new-product prices without reducing the incentive for adopting new products. However, the testimony of later writers (see n. 31, Sitnin) indicates that the 1961 rules had very little effect.

In connection with the 1966–67 price reform a whole new bureaucratic hierarchy to preside over prices was established. This apparatus consists of price committees by branch (as departments under the ministries) and by republic, headed by the State Committee for Prices. The reform tightens up the rules and procedures for fixing temporary prices on machinery by (i) restricting them to products made for the first time in the USSR and designed for series production; (ii) shortening the time limit on the use of such prices to a maximum of 9 (or 15) months; and (iii) establishing sanctions (confiscation of profits) for violation of these limits. The prices themselves are to be based on costs in the first year of serial production, with a profit mark-up not to exceed 10 percent.[36] A decree issued in October 1968 established new procedures for fixing prices on one-time orders for civilian products.[37] Under these rules, prices are to be based on actual costs, including preparatory expenses, plus a profit markup equal to that planned for the firm's basic output, this rate to be no less than 10 percent and no more than 20 percent of the planned cost of the order. Only time will tell whether these new rules will make any difference. Already, however, there are complaints in the press about "violation of price discipline" and the great complexity of the new arrangements.

The fixed wholesale price for calculation of GVO and the transfer

35. Kondrashev, p. 138.
36. Stoliarov, pp. 42–43.
37. *Ekonomicheskaia gazeta*, 1969, no. 1, pp. 24–25.

prices paid by a customer are not necessarily the same. In the case of new types of military equipment, one can imagine that the temporary price might be retained for a long time in the GVO of the enterprise, but that the price actually paid by the Ministry of Defense or the armed forces would be reduced simultaneously with any decline in unit cost. Civilian customers may not fare so well. One investigator states that the high temporary prices become permanent GVO prices for the enterprise although the actual transfer prices may be changed.[38] However, voluminous literature documents the complaints of customers being forced to pay high temporary prices.

For purposes of evaluating GVO indexes and value-of-product indexes, it is relevant that the investment statistics are alleged to be also inflated by excessive prices. The writings of Ia. Kvasha and V. Krasovskii contain the most systematic and general statements as to overpricing of equipment in investment statistics. However, a comparable body of statements about specific types of equipment support the same conclusion. How much the overstatement might be is difficult to guess, and even the estimates by Kvasha and Krasovskii very likely are only intuitions. In commenting on a Soviet estimated price ratio for investment of 58 kopeks to the dollar, Krasovskii alleged that artificial price increases would raise the ratio to 70 kopeks or 20 percent higher. The overstatement of the value of investment in constant prices is blamed on a number of bad practices, one of these being the use of temporary prices for new equipment.[39] In 1968 the two writers, Kvasha and Krasovskii explicitly alleged (i) that the official wholesale price index for MBMW erroneously declined since 1955 when it should have risen, (ii) that the growth of machinery prices is far outstripping the increase in productivity of the machines, (iii) that machine building is "earning superprofits from new products as a result of the massive establishment of unjustifiably high prices for the new and partially improved old products," and (iv) the decline in the output-capital ratio in the national economy is due in part to this distorted pricing.[40]

These considerations suggest that the investment equipment index as well as the GVO-MBMW index is overstated significantly on account of prices. Thus, a valid measure of the growth of machinery would be something significantly less than the investment equipment index and less than sample B, which includes some value indexes. It should be noted again that this overstatement on account of prices can and probably does affect other branches of the GVO index than MBMW.

38. Barry M. Richman, *Soviet Management* (New York: Prentice-Hall, 1965), p. 85.
39. V. P. Krasovskii, *Problemy ekonomiki kapital'nykh vlozhenii* (Moscow, 1967), p. 9.
40. Ia. Kvasha and V. P. Krasovskii, *Voprosy ekonomiki*, 1968, no. 4, pp. 17–20.

Conclusions About Production Measures

The sections above argue that GVO indexes are by and large inflated (especially in machinery) and (perhaps by not as much) so are Soviet announced value-of-product series. The sample A index is vulnerable to the charge of being an inadequate sample. In comparing it, branch by branch, with GVO indexes the divergence seems to spring more from flaws in GVO. The exceptions may be chemicals, soft goods, and perhaps nonferrous metals, where the sample is deficient in coverage or detail. In the light of the obvious and admitted deficiencies of the GVO index, my inclination would be to say that a correct index for comparison with the United States and other countries would be nearer to the physical sample index (with machinery sample A) in total and for most branches than to the GVO index.

Comments on the Usefulness of Soviet Production Statistics

The use of statistics for internal planning and analysis imposes, in general, the same rules of statistical validity as their use for international comparisons. The difference would be primarily in the level of detail required for the former use. Carefully defined product information, correctly priced and aggregated by value-added weights as need be would, it seems to me, be very useful for internal uses in the USSR. However, I cannot think of any proper use for aggregated gross values of establishments unless all other measures are missing. Gross-value output of an enterprise, like value of shipments of a plant in the United States, has utility for management analysis and control. Conceivably gross value might be used for questions of optimum scale of plant or optimum location. However, more detailed breakdown for product within plants would be even more useful for careful analysis of these questions. The establishment classification, and the gross weighting, of the GVO's would distort almost any economic analysis or projection.

The Soviet planners have access to tens of thousands of physical commodity measures annually, quarterly, and even monthly. All these are vitally necessary for the constantly pressing problem of planning and implementing the allocation of supplies. However, for analyzing past performance and for making economic choices, valuations are required. These can be calculated on an ad hoc basis for problems as they arise. I would think it would be very useful not only for Soviet academic economists but for central planners and planners at ministry and even lower levels to have available a comprehensive set of constant price value series, at a 4-digit or 5-digit classification level.

One kind of improvement over the GVO has been suggested by

Soviet economists—net value indexes. One writer, Maiorova, strongly urged the development of net indexes within industry, and made some estimates for 1958 to 1963.[41] The implausibility of her results suggests that the data available to her for deflating material costs must have been very meager. Net value of all industry for 1963 over 1958 was 171, compared with GVO of 154; for MBMW, net value was 164, GVO 198; for nonferrous metals net value was 204, GVO 163. The data for calculating net indexes by branch and subbranches of industry are surely available in the TsSU, but this is no indication that calculation is carried out.

Easier to calculate and probably more useful are value-of-product series, a few of which are now published. Comprehensive physical data by product and base-year product prices are available. Simply from existing reporting, a large part of the industrial output could be covered in considerable detail. These need not cover all products of industry to be useful as interim indicators and as aids to planning. In addition, these series could be free of the double counting and secondary products which debilitate the GVO's.

Detailed and frequent input-output tables, along with appropriate price deflators, may in time provide all kinds of output measures, gross, net, and final output. I cannot imagine I-O tables' ever being timely and detailed enough to obviate the need for a continuous series of product class indexes of one kind or another.

No matter what value statistics the Soviet government decides to assemble, the basic problems of price and product quality will remain as long as the present system of economic management remains. Kvasha and Krasovskii have testified to the shortcomings in investment statistics because of price vagaries. Reporting behavior in the Soviet Union is tied to the evaluation of performance. A sensible and detailed system of product reporting can easily be designed, but implementation is another question. The problem of enforcement of the reporting rules is essentially identical with enforcement of the assortment plan, the price rules, or the rules for valuing new products.[42]

Appendix—Derivation of GVO and Value-Added Weights

This appendix contains tables showing the derivation of the various sets of weights presented in this paper. The sample index (of civilian industrial production) employs two alternative sets of value-added

41. N. S. Maiorova, in N. M. Oznobin et al., eds., *Ocherki po sovremennoi sovetskoi i zarubezhnoi ekonomike* (Moscow, 1967), pp. 107–19.

42. I am greatly indebted to Scot Butler, who did most of the work of updating the weights and the product coverage of the sample index in this chapter, and to Robert Dockstader, who carried out the statistical calculations.

Table 7.8. USSR: Derivation of value-added weights, establishment basis, for 1955 and 1960; product basis for 1959; by branch of industry (million of new rubles)

	Labor Income			*Depreciation*			*Fixed Capital Charges*			*Working Capital Charges*			*Total Value Added*[a]			*Weights (Percent)*[b]		
	Establishment[c]		*Product*[d]	*Establishment*		*Product*	*Establishment*[h]		*Product*[i]	*Establishment*		*Product*	*Establishment*		*Product*	*Establishment*		*Product*
	1955	*1960*	*1959*	*1955*[e]	*1960*[f]	*1959*[g]	*1955*	*1960*	*1959*	*1955*[j]	*1960*[k]	*1959*[l]	*1955*	*1960*	*1959*	*1955*	*1960*	*1959*
Electric power	254	450	486	208	261	267	370	830	849	18	32	33	850	1,573	1,635	4.12	4.54	5.08
Coal	1,593	2,915	2,774	192	480	497	358	582	604	34	35	36	2,177	4,012	3,911	10.54	11.58	12.16
Petroleum products	183	282	247	189	412	363	270	500	441	14	23	15	656	1,217	1,066	3.18	3.51	3.31
Ferrous metals	1,090	1,747	1,497	231	290	287	385	661	653	83	108	106	1,789	2,806	2,543	8.66	8.10	7.91
Nonferrous metals	671	819	736	114	156	182	166	286	335	36	95	111	987	1,356	1,364	4.78	3.91	4.24
Forest products	2,067	2,946	3,089	152	240	217	244	329	297	151	180	162	2,614	3,695	3,765	12.65	10.66	11.71
Paper and paperboard	155	201	174	12	50	51	18	68	70	12	20	21	197	339	316	.95	.98	.98
Construction materials	829	1,803	1,769	83	207	202	127	372	363	30	71	69	1,069	2,453	2,403	5.18	7.08	7.47
Chemicals	559	927	839	100	150	138	174	338	312	58	91	84	891	1,506	1,373	4.31	4.35	4.27
Machinery[m]	2,796	5,716	4,477	292	377	305	459	813	657	374	533	431	3,921	7,439	5,870	18.98	21.47	18.25
Light industry	2,330	3,743	3,159	168	137	144	204	304	321	373	459	485	3,075	4,643	4,109	14.89	13.40	12.77
Food industry	1,393	2,222	2,370	313	281	292	369	618	641	355	489	507	2,430	3,610	3,810	11.76	10.42	11.85
Total	13,920	23,771	21,617	2,054	3,041	2,945	3,144	5,701	5,543	1,538	2,136	2,060	20,656	34,649	32,165	100.00	100.00	100.00

a. Computed as the sum of labor income, depreciation, fixed capital charges, and working capital charges.

b. Computed by dividing the total value added in each branch by the sum of the total value added in all of the given branches of industry. The 1955 weights were used to construct the indexes shown in Table 7.1, above. The 1960 weights appear in Table 7.4, and the 1959 weights in Table 7.6.

c. Calculated for each branch as the sum of estimates of the state wage bill, regular social-insurance deductions, social-insurance deductions by producer cooperatives, payments to trade unions, and other money income not included in the wage fund. The state wage bill was calculated for the most part by multiplying branch employment by average annual earnings as reported in TsSU, *Trud v SSSR, Statisticheskiy sbornik* (Moscow, 1968), pp. 84–85, 87, 89, and 140–41. For 1955, however, unpublished estimates of David Bronson were used for nonferrous metals and petroleum products. Figures on 1960 employment in petroleum products and natural gas were taken from *Promyshlennost' SSSR,* 1964, p. 186, and in nonferrous metals from U.S. Congress, Joint Economic Committee, *New Directions in the Soviet Economy,* pt. II-A (Washington, 1966), p. 280. An estimate of 1960 average annual earnings for the petroleum products and natural gas branch was presented in the *International Labour Review* 86 (Geneva, July 1962), p. 28, and the 1960 average annual earnings in nonferrous metals is an unpublished estimate by David Bronson. The social insurance deduction rates were taken from a Soviet book on the planning of social insurance in the state budget, V. Krulikovskaia et al., *Planirovanie biudzheta gosudarstvennogo sotsial'nogo strakhovaniia* (Moscow, 1959), pp. 17–18.

Footnotes to Table 7.8 (continued)

The rate for nonferrous metals was assumed to equal the rate for ferrous metals. David Bronson provided an estimate of the rate for electric power. Enterprise contributors to trade unions and other money income represent aggregate estimates for 1960 by Thad Alton which have been allocated among the branches of the economy on the basis of the number of workers and among the branches of industry proportionately to the wage bill in each branch.

d. Estimates of employment by 1-O sector, made in Vladimir G. Treml, *The 1959 Soviet Intersectoral Flow Table* (Washington, D.C.: Research Analysis Corp., 1964) 1:95–96, were multiplied by estimates of average annual earnings and social insurance deductions for 1960 (see footnote *c*, above).

e. Depreciation for 1955 was calculated by applying branch amortization rates (for replacement only) prevailing in 1955 to 1955 midyear capital stock. The rates were obtained from a Soviet book on the amortization of industrial fixed capital, P. Bunich, *Amortizatsiia osnovnykh fondov v promyshlennosti* (Moscow, 1957), pp. 106–7. Midyear capital stock was derived by moving value figures for the 1960 capital stock back to 1 January 1955 and 1 January 1956 and then taking the average of the two. Capital stock as of 1 January 1960 was calculated from data appearing in *Narkhoz 60*, pp. 86–87; indexes used to move the 1960 figures appear in *New Directions in the Soviet Economy*, p. 313. The division of depreciation between forest products and paper was estimated on the basis of the division in wages.

f. The branch amortization rates (for replacement only) used to compute depreciation in 1960 were reported in Soviet collateral sources: D. A. Baranov, *Teoriia amortizatsii i tekhnicheskii progress* (Moscow, 1965), p. 155; E. A. Ivanov, *Vosproizvodstvo i ispol'zovanie osnovnykh fondov* (Moscow, 1968), p. 196. These rates were applied to estimates of average annual fixed capital by branch based on the distribution shown in *Narkhoz 60*.

g. The branch amortization rates used to compute depreciation in 1959 were the same as those used for 1960 (see footnote *f*, above). These rates were applied to capital stock estimates derived from capital coefficients for the 1959 1-O table and RAC's reconstruction of the 1959 table. Vladimir G. Treml, "New Soviet Inter-industry Data," in *Soviet Economic Performance 1966–67* by Joint Economic Committee (Washington, D.C., 1968), pp. 146–48.

h. Imputed interest on fixed capital was derived by applying an 8-percent charge to the capital stock at midyear. The rate of 8 percent has frequently been used in other work where capital charges were required (see, for example, Richard Moorsteen and Raymond P. Powell, *The Soviet Capital Stock, 1928–1962*, (Homewood, Ill., 1966), and Stanley H. Cohn. *Derivation of 1959 Value-Added Weights for Originating Sectors of Soviet Gross National Product* (Research Analysis Corporation, McLean, Va., 1966). The division of the capital charge between forest products and paper was estimated on the basis of the division in wages.

i. Eight percent of the fixed capital in 1959 on an 1-O or product basis (see footnotes *g* and *h*, above).

j. Interest on working capital was derived by applying an 8-percent charge to 1955 midyear working capital in each branch of industry. Working capital is defined as the sum of "trade material values" and "goods shipped and other working capital" less "prepaid expenses." Estimates of midyear working capital were derived as follows. Aggregate industrial working capital at year-end were derived as follows. Aggregate industrial working capital at year-end was available for 1955 and 1960 from official Soviet statistics (see footnote *k*, below), but there was no distribution by branch of industry for years prior to 1960. The percentage distribution of working capital by branch of industry at year-end in 1955 was estimated by deriving for each branch a 1960 ratio of fixed capital to working capital and then correcting this ratio for the change in the total industrial working capital/fixed capital ratio between 1955 and 1960. The adjusted ratio for each branch was applied to the value of fixed capital in 1955 and a percentage distribution was then derived from the year-end value figures. The ruble value of industrial working capital for midyear 1955 was estimated by calculating for all industry the 1960 ratio of midyear working capital to year-end working capital and by applying this ratio to year-end working capital in 1955.

The aggregate ruble figure for midyear working capital in 1955 was distributed among the branches of industry using the percentage distribution derived above.

k. Computed as 8 percent of working capital at the end of 1960. The value for "trade material values" (see footnote *j*, above) at the end of 1960 for industry as a whole was taken from *Narkhoz 62*, p. 56, and the value of trade material values for the branches of industry from the Soviet journal, *Planovoe khoziaistvo*, 1962, no. 9, p. 49. "Prepaid expenses" and "goods shipped and other working capital" were distributed among the branches proportionately to the distribution of "trade material values".

l. Charges for working capital in 1959 on an I-O classification were assumed to bear the same relation to charges for fixed capital as the ratio of charges for working capital in 1960 on an establishment basis to charges for fixed capital. See footnote *k*, above, for the derivation of working capital charges on an establishment basis.

m. Because value-added weights appropriate to civilian industry were desired an effort was made to eliminate from the machinery weight that part of value added in the production of military equipment. Accordingly the values in the machinery row represent 50 percent for 1955 and 60 percent for 1960 and 1959 of total value added in the machinery sector.

Table 7.9. USSR: Derivation of GVO weights, by branch of industry, for 1960

	GVO weights[a] *(percent)*	*GVO values (billion new rubles)*[b]	*GVO indexes*[c] *(1960 = 100)*	*GVO values (billion new rubles)*[d]	*GVO weights*[e] *(percent)*
Total industry	100.00	215.6[f]	139	155.2[f]	100.0
Materials	–	–	–	–	30.8[g]
Electric power	2.8	6.0	160	3.8	2.4
Fuels	4.7	10.1	129	7.8	5.0
Ferrous metallurgy	–	–	137	–	5.6[h]
Nonferrous metallurgy	–	–	–	–	2.6[i]
Forest products Paper and paperboard	5.4	11.6	122	9.5	5.5[j] 0.6[j] 6.1
Construction materials	4.3	9.3	141	6.6	4.3
Chemicals	–	–	173	–	4.3[k]
Glass and porcelain	0.6	1.3	150	0.9	0.6
Machine-building and metalworking	26.0	56.1	164	34[l]	21.9
Consumer nondurables	–	–	–	–	45.5[m]
Light	18.5	39.9	113	35.3	22.7
Food	20.7	44.6	126	35.4	22.8
Other[n]	–	–	–	–	1.8[o]

a. The GVO weights in this column are from a publication of the Council for the Study of Productive Forces, Gosplan USSR: N. N. Nekrasov, et al., *Razvitie i razmeshchenie proizvoditel'nykh sil ekonomicheskikh raionov SSSR* (Moscow, 1967), p. 169.

b. Expressed in enterprise wholesale prices of 1 July 1955. The ruble GVO for each branch was calculated by applying the respective percentage weight in the first column to the ruble GVO of total industry (215.6 billion rubles).

c. From *Narkhoz 65*, p. 126.

d. Expressed in enterprise wholesale prices of 1 July 1955. Unless otherwise noted, the ruble GVO in 1960 for each branch shown in this column was derived by moving 1964 values (second column of the table) back to a 1960 base using the appropriate GVO index (third column of the table).

e. Unless otherwise noted the GVO weight for each branch was calculated by dividing its 1960 GVO value (fourth column of the table) by the GVO value for total industry (155.2 billion rubles).

f. From *Narkhoz 65*, p. 121.

g. Computed as the sum of the branches subsumed under the materials sector of industry.

h. This figure is rounded from the 5.55 percent reported in a publication of the Economic Scientific-Research Institute, Gosplan USSR: N. M. Oznobin et al., *Sovershenstvovanie struktury promyshlennogo proizvodstva* (Moscow, 1968), p. 67.

i. Estimated from data on the ratio between the GVO and the capital stock of nonferrous metallurgy in 1960 as presented in a recent Soviet collateral source, V. N. Kostiuk, *Fondootdacha v tsvetnoi metallurgii* (Moscow, 1969), pp. 49–50, utilizing the capital stock data reported in *Narkhoz 60,* p. 87.

j. Computed from information published by the Economics Institute, Academy of Sciences USSR, on the structure of the GVO of the forest products and paper industry in 1960 (89.8%, forest products and 10.2%, paper): A. M. Korneev et al., eds., *Promyshlennost' v khoziaistvennom komplekse ekonomicheskikh raionov SSSR* (Moscow, 1964), p. 340.

k. From A. G. Omarovskii, *Vestnik moskovskogo universiteta,* ser. 7, 1967, no. 1, p. 36.

l. From TsSU, *SSSR v tsifrakh v 1961 godu,* p. 108. The officially published value of 34 billion rubles is given here in preference to the calculated value (34.2 billion rubles).

m. Computed as the sum of the branches subsumed under the consumer nondurables sector.

n. Includes minor branches producing abrasive, mica, and graphite products, glass and porcelain-pottery products, jewelry, musical instruments, sports equipment, printed matter, and the like.

o. Computed as a residual (total industry minus the sum of the weights for the materials, machine building and metalworking, and consumer nondurable sectors).

weights: one for 1955 and the other for 1960. In addition, a set of value-added weights was calculated for 1959 using information from the 1959 Soviet Input-Output Table, supplemented by collateral information. Although the data underlying the 1955 and 1960 weights are on an "establishment" basis while those of the 1959 weights are on a "product" basis, the methodology used to construct the value-added weights was essentially the same. Accordingly, the derivation of all the value-added weights is shown in Table 7.8.

In order to test the difference in weighting systems as a factor contributing to the difference in growth between the sample index and the GVO index, 1960 GVO weights were required for those branches of industry included in the sample index.[43] The method of deriving these weights is shown in Table 7.9.

43. In one case, two separate branches in the sample index are consolidated into a single branch in the GVO weights. Thus the coal and petroleum products branches are represented by the single GVO weight for the fuels branch.

8

Murray Feshbach

Soviet Industrial Labor and Productivity Statistics

In 1968, after a hiatus of thirty-two years, a statistical handbook containing detailed data on labor in the USSR was finally published. Not since 1936, when two comprehensive statistical compendia on labor were released, has there been an entire official publication devoted solely to manpower statistics.[1] Issued by the Central Statistical Administration (TsSU), the handbook, *Trud v SSSR,* is at once both useful and disappointing. It is useful in that it contains many items published for the first time since the 1930's, thus eliminating the necessity of attempting to piece them together from a multitude of secondary sources. The compendium is disappointing in that it omits much data which TsSU is known to collect, either on a regular basis or through special-purpose surveys. Moreover, the absence of significantly revised employment data, published in *Narkhoz 68* or made available to the International Labour Office, greatly reduces the compendium's value as a source for Western analysts in preparing consistent series of industrial manpower statistics.

The issuance of *Trud v SSSR* and the planned release of similar handbooks on a regular basis in the future apparently are the result of several important changes in the status of TsSU and its policy regarding publication. During the latter part of the 1930's and the 1940's, TsSU, then subordinate to Gosplan (the State Planning Committee), was restricted by the tight censorship and publication policies imposed by Stalin. In 1948 the agency was established as an independent entity attached to the USSR Council of Ministers, and basic statutes regulating its activities subsequently were promulgated.[2] The pertinent article related to statisti-

1. Tsentral'noe upravlenie narodnokhoziaistvennogo ucheta Gosplana SSSR, Sektor ucheta truda, *Chislennost' i zarabotnaia plata rabochikh i sluzhashchikh v SSSR* (Moscow, 1936), and idem, Otdel ucheta truda, *Trud v SSSR* (Moscow, 1936). These two volumes ended an irregular series of such publications which was started in the 1920's.

2. For details on the history and organization of TsSU, see Murray Feshbach, *The Soviet Statistical System: Labor Force Recordkeeping and Reporting,* ser. P–90, no. 12 (Washington, 1960), pp. 6–14, and *The Soviet Statistical System: Labor Force Recordkeeping and Reporting Since 1957,* ser. P–90, no. 17 (Washington, 1962), pp. 5–7. A recent publication by A. I. Ezhov, a deputy chief of TsSU USSR, entitled *Organizatsiia statistiki v SSSR* (Moscow, 1968), 216 pp., updates the earlier sources and presents the most detailed organizational chart of TsSU ever published in the Soviet Union (pp. 48–49).

cal publication is as follows: "(11) to disseminate statistical information by publishing the results of fulfillment of State economic development plans, statistical bulletins, statistical handbooks, the journal *Vestnik statistiki*, the work of TsSU, and scientific and popular statistical literature."[3] There was no immediate change in the open publication activities of TsSU, however, and it was not until the spring of 1956, when the first national economy handbook in twenty years was issued, that a decisive change in publication policy was made. The previous system was scored by V. N. Starovskii, chief of TsSU, in September 1956 when he stated: "A majority of the materials of State and departmental accounting and statistics were unnecessarily made secret or were put aside into materials not subject to press publication. And until recently, statistical data were not published."[4]

The next major change occurred early in 1960 with the issuance of a new set of regulations for TsSU, which appear to be the rules under which the agency operates today. A significant rewording took place in respect of publication policy. Instead of stressing publication per se, the regulations call for the supply of data to other agencies: "11. to supply materials from State statistics in an established sequence to scientific institutions and to higher educational institutions necessary for them in accordance with their scientific research plans."[5]

Precisely how this regulation relates to the publication of *Trud v SSSR* has not been spelled out by Soviet officials. However, given the broad and continuing requests for more statistics on labor made by Soviet planners and scholars, and the stated plans to publish more handbooks on the subject, we should expect to obtain considerably more manpower data in the future than in the past. Nonetheless, secondary sources no doubt will continue to be important sources of information on certain manpower topics as they have been in the past. Data on labor turnover, for example, still are not published in official handbooks; books or articles dealing with either location of industry or industrial sociology provide most of the basic information available on the subject.[6] In addition, the plethora of publications issued since 1960 on the economic history

3. Feshbach, *Soviet Statistical System* (1960), p. 11.

4. Cited in ibid., p. 20. See Chapter 3 by Michael Kaser in this volume, which describes the background to the change in policy reflected in this (single) citation.

5. Feshbach, *Soviet Statistical System* (1962), p. 9, n. 6.

6. See Murray Feshbach, "Manpower in the USSR: A Survey of Recent Trends and Prospects," in U.S., Congress, Joint Economic Committee, *New Directions in the Soviet Economy*, pt. 3 (Washington, 1966), pp. 727–35; and Ia. G. Feigin et al., eds., *Problemy ekonomicheskoi effektivnosti razmeshcheniia sotsialisticheskogo proizvodstva v SSSR* (Moscow, 1968), pp. 114–15. This latter source contains the best table on labor turnover published since the 1930's.

of the USSR contain a wide variety of archival materials released by TsSU to various institutes and universities in accordance with the new regulations.[7] Unfortunately, both the secondary sources and the handbooks frequently contain contradictory or unclear information. This is usually due to reclassification, the permanent bane of attempts to construct consistent historical series, although there often are other unknown or unspecified reasons.[8]

This chapter is concerned primarily with the availability of official statistical data on Soviet industrial labor. Special emphasis is given to data on the numbers of persons employed, by class of worker and branch of industry, although attention is also given to statistics on worktime, the occupational structure, and labor productivity. The reporting, scope, and coverage of the data are discussed briefly, and gaps and inconsistencies in the various series are noted. Finally, new and current developments in the collection and reporting of labor statistics are briefly noted. Certain types of labor statistics are not discussed here, notably labor data for input-output analysis,[9] labor supply in terms of migration[10] or in terms of flows from the various institutional channels and households,[11] balances of labor resources,[12] and administrative-management personnel.[13]

Employment Statistics

Reporting and Coverage

Statistics on industrial labor are derived primarily from monthly and annual labor plan fulfillment reports submitted to TsSU by industrial

7. Among others, see the books edited by I. A. Gladkov and by P. A. Khromov, which contain significant data from archives on industrial employment and output, particularly for the early years and the immediate postwar period.

8. For example, see my comments on *Trud v SSSR* published in *ASTE Bulletin* 10, no. 3 (Winter 1968), esp. pp. 308–9, which contain contradictory data on the allocation of vocational-technical school graduates to individual sectors of the national economy and branches of industry.

9. See A. N. Efimov and L. Ia. Berri, eds., *Metody planirovaniia mezhotraslevykh proportsii* (Moscow, 1965), passim; and U.S., Congress, Joint Economic Committee, *Soviet Economic Performance: 1966–67* (Washington, 1968), pp. 153–54.

10. See the unique absolute data published in *Vestnik statistiki*, 1968, no. 10, pp. 89–95.

11. Data on this subject are either lacking or are not published in a systematic form. A discussion of labor supply, including data available, is given in Feshbach, "Manpower" (1966), pp. 713–43.

12. See Feshbach, *Soviet Statistical System* (1960), pp. 75–85.

13. See *Narkhoz 59*, p. 595; *Narkhoz 60*, p. 644; and especially, *Trud v SSSR* (Moscow, 1968), pp. 77–78. The latter source (p. 78) for the first time gives the total number of administrative-management personnel by branch of the national economy. Branch-of-industry data, for Belorussia only, are found in P. Labok, *Vestnik statistiki*, 1965, no. 7, pp. 42–52.

enterprises and organizations.[14] Employment data in the monthly enterprise reports include, for the categories of industrial-production personnel (*promyshlenno-proizvodstvennyi personal*), wageworkers (*rabochie*), and nonindustrial personnel (*nepromyshlennyi personal*), the planned and actual number for the month, the actual number in the corresponding month of the previous year, and the average number since the beginning of the year. In the three months marking the end of each of the first three quarters of the year, as well as in the annual report, the above monthly data are provided as well as information on the other categories of industrial-production personnel—engineering-technical personnel, salaried employees, minor service personnel, guards, and apprentices. Average data for the last month of every quarter are also given for employment in each of the nonindustrial activities of the enterprise—housing-communal economy, cultural and personal services, medical institutions, kindergartens, educational institutions, subsidiary agriculture, transport performed primarily for nonindustrial purposes, capital repair of buildings and structures, etc. Persons engaged in these activities are not distinguished by class of worker, as are the basic industrial-production personnel, but they are allocated statistically to the appropriate branch of the economy in the monthly and annual average employment summaries of TsSU. Separate reports on employment are submitted by capital construction and workers' supply departments. Their employment does not appear in either the industrial-production or the nonindustrial categories.

The calculation of average employment by month is made according to the following method. The monthly average number of all industrial-production personnel is determined within each industrial enterprise as the mean daily number of persons in this group whose labor booklets are maintained by the enterprise. For the denominator in this calculation the number of calendar days is used, rather than the number of workdays in the month, requiring that the work force be counted on holidays and other days off. For each such day off the same number is used as the number registered on the previous workday. The practice of using the full calendar month is followed even when the enterprise has been in operation for only part of the month. Similar procedures are followed in

14. The basic sources for the following discussion are Feshbach, *Soviet Statistical System* (1960 and 1962); N. M. Eremina and V. P. Marshalova, *Statistika truda* (Moscow, 1965), 288 pp. "Dopolnitel'nye ukazaniia k sostavleniiu otchetov promyshlennykh predpriiatii o vypolnenii plana po trudu po formam No. 2-T (kratkaia) and No. 2-T (kvartal'naia)," *Biulleten' Gosudarstvennogo komiteta Soveta Ministrov SSSR po voprosam truda i zarabotnoi platy*, 1969, no. 2, pp. 9–18; and S. A. Shchenkov, *Bukhgalterskii uchet v promyshlennosti*, 3rd ed. (Moscow, 1969), passim. Wage data, which are an integral part of these reports, are not discussed here. They are described in Chapter 13 of this volume, by Gertrude Schroeder.

preparing the annual report of the enterprise. All monthly average numbers are summed and divided by 12, even though the enterprise may not have operated a full year. The rationale for this procedure apparently is that of an expectation of full employment, with relatively instantaneous movement between jobs.

Quarterly data on accessions and separations of wageworkers have also been collected for many years. Beginning in 1968, the annual labor plan fulfillment report for 1967 also contains data on the accessions and separations of engineering-technical personnel.[15]

Scale of operation has long been an important determinant in the inclusion of an enterprise or activity in employment figures for industry. At present, however, it is less significant, since small-scale industry contributes only an estimated 4–6 percent of the output of all industry.[16] The demarcation between large- and small-scale industry is still retained for historical comparisons. Definitions of the two categories in use since 1957 are as follows:[17]

Large-scale industry in 1957:

a. All basic industrial enterprises of sovnarkhozy and individual [industrial] ministries, regardless of the number of wageworkers and the availability of mechanical motive power, except subsidiary enterprises and enterprises of raion subordination.

b. Those enterprises of raion subordination and subsidiary enterprises of sovnarkhozy and individual ministries attached to construction sites, sales organizations, educational institutions, research institutes, etc., as well as all industrial enterprises of nonindustrial ministries and central agencies, producers' cooperatives, and collective farms which have not less than 16 persons employed with mechanical motive power, or 30 persons without mechanical motive power.

c. All electric power stations with a capacity of 15 kw or more, and all substations (of the net), regardless of the number of persons employed.

d. All flour mills with five or more two-cylinder machines, or with two millstone sets.

Small-scale industry in 1957. The basic mass of collective farm enterprises, producers' cooperatives, and subsidiary enterprises attached to construction sites, state farms, workers supply organizations (*ORSy*), and other institutions and organizations.

15. Shchenkov, *Bukhgalterskii* (1969), p. 363; and V. E. Adamov et al., *Statistika na promyshlennom predpriiatii v usloviiakh ekonomicheskoi reformy* (Moscow, 1969), p. 123.

16. Ezhov, *Organizatsiia* (1968), p. 77.

17. A. I. Ezhov, *Statistika promyshlennosti,* 3d ed. (Moscow, 1957), pp. 53–54; A. I. Ezhov, *Statistika promyshlennosti,* 4th ed. (Moscow, 1966), pp. 53–54; and Ezhov, *Organizatsiia* (1968), pp. 161–62.

Large-scale industry in 1966:

a. All basic industrial enterprises of [industrial] ministries, regardless of the number of wageworkers and the availability of mechanical motive power, except subsidiary enterprises and enterprises of raion subordination.

b. Same as for 1957, excluding reference to producers' cooperatives.

c. Same as for 1957.

d. Same as for 1957.

Small-scale industry in 1966. Same as for 1957, excluding reference to producers' cooperatives.

Large-scale industry in 1968:

a. Same as for 1966.

b. Same as for 1966, excluding reference to sovnarkhozy. Instead of producers' cooperatives, reference is made to consumers' cooperatives.

c. Same as for 1957 and 1966.

d. Same as for 1957 and 1966.

Small-scale industry in 1968. Same as for 1966, including reference to consumers' cooperatives. In addition, the following is given: "Small-scale enterprises, as a rule, are not on an independent balance. The results of their activities are reflected in the annual reports of those organizations in which they are found as subsidiary economic units."

A census of small-scale industry was conducted every year from 1939 until 1953 (except in 1948), then two times every five years during the period 1954–62. No such census has been taken since that time. In 1961, nonindustrial organizations with small-scale subsidiary industrial establishments began to report the annual average number of industrial-production personnel and wageworkers which they employed. These reports give TsSU a much clearer picture of the employment (as well as output and capital) pattern in industrial activities, regardless of where they are carried out. Beginning with the report for 1963, a formal governmental decision required construction sites, state farms, collective farms, and other nonindustrial organizations and institutions to include reports on their small-scale subsidiary industrial activity as part of their regular annual reports.[18]

18. Ezhov, *Organizatsiia* (1968), pp. 77–78; V. Moskovkina et al., *Vestnik statistiki*, 1963, no. 2, p. 87; and D. V. Savinskii, "Statistika promyshlennosti," in A. I. Ezhov et al., eds., *Istoriia sovetskoi gosudarstvennoi statistiki*, 2d ed. (Moscow, 1968), p. 107. It is not known why the footnote to the table on the distribution of employment in industry by class of worker, in the statistical handbooks, continues to state that the table excludes "workers and employees of part of the small-scale, subsidiary enterprises." Perhaps the exclusion referred to in the footnote is smaller than the number not included before TsSU began to collect information on subsidiary industry on a regular basis. See *Narkhoz 67*, p. 207, and for 1968, p. 205.

Industrial employment figures in the TsSU handbooks have not included kolkhoz industrial employment by branch of industry since the 1956 handbook, nor by republic since the 1962 handbook. Thus, no absolute data have been presented in national statistical compilations which include collective-farm industry employment. This situation may be altered shortly, however. A drive began in 1966 to expand the subsidiary industry of collective farms, intercollective farm organizations, and state farms in an effort to provide a solution for the large seasonal variations in the levels of employment on collective farms.[19] In 1968 collective farms had 192,100 subsidiary enterprises which produced 3,410 million rubles of industrial output.[20] If each enterprise had as few as three or four persons employed on the average for the year, a total of 575,000 to 775,000 persons would have been omitted from the standard industrial employment statistics. Employment in these collective farms enterprises is growing, and provision should be made by TsSU to incorporate it in the regularly published figures.

Data on industrial employment in the TsSU handbooks must also be evaluated in terms of their inclusion or exclusion of employment in producers' cooperatives. Until the 1965 handbook was published, the footnote to the basic industrial wageworker employment table by branch of industry indicated that *members* of producers' cooperatives engaged in industrial activity were excluded. Hired workers and employees have always been included in the table, in the same manner as persons employed in the State sector. On 1 October 1960, all producers' cooperatives which had not been abolished in 1956 were transferred to state industry, and total industrial employment data for that and subsequent years include all employment in the former producers' cooperatives.

An illustration of the practice followed by TsSU in classifying employment data reported by various types of enterprises and activities is given in Table 8.1. Employment in machine-building and metalworking provides a good example, as this type of work is carried on in many different kinds of enterprises and organizations. The table clearly shows that not all persons engaged in machine-building or metalworking are reported in that branch of industry in the statistical handbooks.

Data Available for Branch-of-Industry Statistics

Relative to the quantity of statistical materials released in 1956, a large amount of industrial employment data is now available. There are numerous complications in terms of continuity and branch classification

19. *Soviet Economic Performance: 1966–67,* p. 65.

20. G. M. Bogush et al., *Sel'skoe khoziaistvo SSSR v tsifrakh* (Moscow, 1969), chart 36. Production virtually was at a standstill between 1960 and 1964 (2,129 and 2,134 million rubles, respectively), but it increased sharply thereafter.

Table 8.1. Classification of industrial activities as reflected in machine-building and metal-working (MBMW) employment data reported in statistical handbooks; 1956 to 1968

Branch, type of enterprise, scale of operation, and kind of activity	*State sector*	*Producers' cooperative sector*	*Consumers' cooperative sector*	*Collective farm sector*
Industry				
MBMW enterprise				
Large-scale[a]				
Basic activity	+	[b]+	[c]+	x
Subsidiary activity	+	[b]+	[c]+	x
Small-scale[a]				
Basic activity	+	—	—	x
Subsidiary activity	+	—	—	x
Non-MBMW enterprise (with MBMW activity)				
Large-scale				
Basic activity	x	x	x	x
Subsidiary activity	—	—	—	x
Small-scale				
Basic activity	x	x	x	x
Subsidiary activity	—	—	—	x
Nonindustry				
Nonagriculture				
MBMW enterprise				
Large-scale				
Basic activity	[d]+	—	—	x
Subsidiary activity	[d]+	—	—	x
Small-scale				
Basic activity	[e]+ and —	—	—	x
Subsidiary activity	[e]+ and —	—	—	x
Non-MBMW enterprise (with MBMW activity)				
Large-scale				
Basic activity	x	x	x	x
Subsidiary activity	—	—	—	x
Small-scale				
Basic activity	x	x	x	x
Subsidiary activity	—	—	—	x
Agriculture				
MBMW enterprise				
Large-scale				
Basic activity	[f]+ and [g]—	x	x	[g]—
Subsidiary activity	[f]+ and [g]—	x	x	[g]—
Small-scale				
Basic activity	[f]+ and [g]—	x	x	[g]—
Subsidiary activity	[f]+ and [g]—	x	x	[g]—
Non-MBMW enterprise (with MBMW activity)				
Large-scale				
Basic activity	x	x	x	x
Subsidiary activity	[g]+ and —	[h]—	x	[g]—
Small-scale				
Basic activity	x	x	x	x
Subsidiary activity	[g]+ and —	[h]—	x	[g]—

Notes to Table 8.1.

\+ Included in MBMW employment figures.
− Excluded from MBMW employment figures.
x Not applicable.

a. See text above, under the heading "Reporting and Coverage," for the definition of large-scale and small-scale enterprises.

b. Until 1 October 1960, state sector employment figures included only *hired* workers and employees of producers' cooperatives. The revision of the basic table, as first published in *Narkhoz 65,* p. 140 and 558, reflected the addition of *members* of producers' cooperatives. See also ibid., p. 817.

c. Employment in large-scale enterprises of consumers' cooperatives is included with that of the state sector.

d. This category includes, for example, MBMW enterprises of the railroad ministry. Such enterprises are not insignificant. In 1965 they produced 408.5 million rubles of locomotive repair work alone. The total gross value of output by the railroad ministry's industrial enterprises was over 1.3 billion rubles. T. E. Trubachev, *Spetsializatsiia i kooperirovanie predpriiatii zheleznodorozhnogo transporta* (Moscow, 1966), p. 16.

e. Includes small-scale MBMW enterprises and all activities of construction and trade organizations engaged in this type of work. *Narkhoz 65,* pp. 559 and 646. Excludes small-scale subsidiary enterprises and shops attached to other branches of the economy which are referred to in the footnote to industrial employment tables in all handbooks—e.g., *Narkhoz 62,* p. 130—with the exception given in note *f* below. Since 1961 it has become possible for TsSU to include in the MBMW data employment in all subsidiary industrial enterprises which are carried on the balance of nonindustrial organizations, except certain specified organizations such as "experimental workshops attached to scientific-research organization." (Instructions for completing annual report form No. PP-godovaia "Kratkii otchet o rabote podsobnykh promyshlennykh predpriiatii, sostoiaschikh na balanse nepromyshlennoi organizatsii, za 1961 god.") This report form apparently has been completed each year by nonindustrial organizations: L. E. Mints, *Mezhotraslevoi balans ekonomicheskogo raiona* (Moscow, 1967), p. 23; but the yearbook footnote regarding incomplete coverage continues to appear.

f. Personnel of machine-tractor stations and repair-tractor stations engaged in machinery repair were included in the workers and employees figures shown in the basic yearbook table on average annual employment. *Narkhoz 60,* p. 521. Employment in the housing-communal economy, the capital repair of buildings and structures, and some other unspecified nonindustrial activities of these stations were excluded. This practice was consistent with that used for state and collective farms. However, with the abolition of the RTS's in 1961, the methodology was changed. Employment in repair workshops of *Sel'khoztekhnika* is included with employment in industry, and therefore MBMW. This is noted at the end of all yearbook tables covering annual average employment of workers and employees for 1961-67. Also see footnote *g.*

g. Narkhoz 65, p. 832, explicitly states that the total employment figures given for collective and state farms and subsidiary state agricultural establishments include employment in their subsidiary industrial enterprises and capital repair of machinery. However, the thrust of the change in scope and classification of industrial employment evidenced by *Narkhoz 68* is to include these subsidiary industrial activities in "industry." The footnote to the basic "worker and employee" table (p. 548) indicates that the industry, construction, and agriculture data have been revised. From the table it is evident that the revision in the 1967 data involved a shift of employment from state agriculture to industry and construction—about four-fifths of the transferred total to the former, one-fifth to the latter.

h. At one time the producers' cooperative system included industrial kolkhozy (*promkolkhozy*). See S. A. Gorelik, *Statistika* (Moscow, 1956), p. 11. Employment in these artels, if at all related to MBMW, undoubtedly was not included with the state sector MBMW figures.

to be considered when using these data, however. The first two postwar national economy handbooks and the first specialized handbook on industry contained absolute figures for total employment in industry, but only percent distributions of different and unknown totals for branch-of-industry data. Absolute branch-of-industry statistics appeared for the first time in the fortieth anniversary handbook issued in 1957, *Dostizheniia sovetskoi vlasti za 40 let v tsifrakh*. This handbook contains employment data on six major branches of industry for four years (1913, 1928, 1940, and 1956). Since its publication, all national economy handbooks, the industry handbook released in 1964, and the recent labor handbook have contained data of similar types, although they at times differ from one to the next because of changes in scope or branch classification. In addition, the branches or subbranches of industry and the years for which data are reported vary greatly. These factors militate against the possibility of assembling consistent, historical series of employment by branch.

Data Available for Wageworkers. In order to illustrate the mixed assortment of data on wageworkers available, Tables 8.2 and 8.3 show the detail, by year and branch or subbranch of industry, for which statistics have been reported in each of the major handbooks released since 1956. Although at first glance it may appear that a fairly good run of data is available, there are many gaps and inconsistencies. For example, wageworker employment by branch has never been revealed for two years (1951 and 1954) of the period 1950–68. A major problem is also created by the differing treatment of members of producers' cooperatives, as noted above. The revision of data to include these persons for years prior to 1960 was begun only in the handbook for 1965. The upper left segment demarcated by a heavy line in Table 8.2 indicates that the data for the years 1913–59 published in all handbooks prior to 1965 omit members of producers' cooperatives. Thus, depending on the numerical significance of these persons in any branch of industry, the data reported in the earlier handbooks are noncomparable in varying degrees with those published for the years 1913–59 in *Narkhoz* and later sources. For example, for 1950 and 1958 the differences between the two sets of data are negligible (10,000 or less) for the coal, ferrous metallurgy, chemical, and pulp and paper industries. Differences of 20,000–40,000 appear for the construction materials and food industries and of approximately 100,000 in each year for the machine-building and metalworking industry, but proportionally these differences are not significant. A wider gap, in relative terms, appears for the timber, woodworking, and pulp and paper industry group, where in 1950 the difference was 8.9 percent (150,000) and in 1958, 5.3 percent (114,000). The most signifi-

Table 8.2. Industrial wageworkers—years for which branch-of-industry employment data are given in statistical handbooks

Handbook	1913	1928	1940	1950	1952	1953	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Dostizheniia	X	X	X					X												
Narkhoz 58	X		X					X	X	X										
Narkhoz 59	X		X					X	X	X	X									
Narkhoz 60	X		X				X			X	X	X								
Narkhoz 61	X		X							X	X	X	X							
Narkhoz 62					X					X		X		X						
Prom. SSSR	X	X	X	X		X	X			X		X		X	X					
Narkhoz 63				X						X		X		X	X					
Narkhoz 64			X	X						X		X			X	X				
Narkhoz 65			X	X						X						X	X			
Strana	X	X	X									X						X		
Trud v SSSR				X			X					X					X	X		
Narkhoz 67			X	X								X					X	X	X	
Narkhoz 68			X									X					X	X	X	X

Table 8.3. Industrial wageworkers—branches of industry for which employment data are given in statistical handbooks

Branch of industry	*Dostizheniia*	1958	1959	*Narkhoz* 1960	1961	1962	*Prom.* SSSR	*Narkhoz* 1963	1964	1965	*Strana*	*Trud v SSSR*	*Narkhoz* 1967	1968
Total number of branches listed	6	6	6	7	7	7	8	10	9	10	7	37	10	11
Machine-building and metalworking	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fuels												X		
Coal	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Oil	X	X	X	X	X	X	X	X						
Ferrous metallurgy	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Light	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Textile												X		
Cotton ginning												X		
Cotton textiles												X		
Wool												X		
Silk												X		
Knitted wear												X		
Garment												X		
Leather, fur, and shoe												X		
Shoe												X		
Food	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sugar												X		
Meat												X		
Milk and dairy products												X		
Flour milling and grain cracking												X		
Baking												X		
Fruits and vegetables												X		
Alcohol												X		
Wine												X		
Tea												X		
Construction materials				X	X	X	X	X	X	X	X	X	X	X
Cement												X		
Glass and chinaware												X		
Glass												X		
Chinaware												X		
Chemical, rubber, and asbestos							X	X						
Chemical									X	X	X			
Chemical and petrochemical													X	X
Timber, woodworking, and paper								X	X	X		X	X	X
Timber exploitation												X		X
Woodworking												X		
Sawn wood												X		
Plywood												X		
Furniture												X		
Pulp and paper												X	X	X
Paper								X	X	X				
Electric power										X		X	X	X

cant differences in both absolute and relative terms are in light industry, which employed large numbers of members of producers' cooperatives. The number of wageworkers shown for this industry as of 1950 in the 1965 handbook is 486,000, or 29 percent more than the number reported in the earlier sources which omitted members of the cooperatives.

These data concerning producers' cooperatives provide the basis for one of the few instances in which it is possible to verify the consistency of reported figures with comparable data reported in earlier sources. In all of the *Narkhoz* handbooks from 1960 through 1964, footnotes to the wageworkers branch-of-industry table state that "the number of wageworkers in 1960 includes about 1 million members of the former producers' cooperative artels transferred to the state enterprise system. Of these, 0.6 million persons were transferred to light industry, 0.1 million persons to machine-building and metalworking, and 0.3 million to other branches of industry." These figures are similar—within rounding—to the following figures obtained by subtracting the number employed in the appropriate branch, as reported in the earlier handbooks, from the number reported in *Narkhoz 65:* 957,000 total wageworkers, 592,000 in the light industry, 85,000 in machine-building and metalworking, and a residual of 280,000 for other branches.

From Table 8.3 it can be seen that data are always reported for wageworkers employed in the machine-building and metalworking, coal, ferrous metallurgy, light, and food industries. Beginning with *Narkhoz 60,* data on the construction-materials industry have also been regularly reported. The inclusion of these industries, however, is no guarantee of continuity in scope. In fact, because of changes in branch classification, which occur in all countries, many series are discrete. For example, *Narkhoz 67* contains higher figures for four industries than ever published before, even in comparison with those given in the recently published handbook on labor. The larger employment figures in *Narkhoz 67* for the four industries (machine-building and metalworking; timber, woodworking, and paper; the subbranch, pulp and paper; and construction materials) can be explained in part by the changes in branch definition given in the short methodological section on branches of industry in each *Narkhoz* since the 1963 handbook, but omitted in *Narkhoz 68.* For example, *Narkhoz 67,* p. 924, includes in the definition of machine-building and metalworking industry the production of artificial diamonds and abrasive materials, which in earlier handbooks had been classified elsewhere. Changes in definition can be found in *Narkhoz 67* for all branches but the glass and chinaware industry.

There are also frequent changes in designation for the various branches

—usually, but not always, accompanied by a change in definition. For example, prior to and including the publication of *Promyshlennost' SSSR* in 1964 the chemical industry was called the "chemical, rubber, and asbestos" industry. In three subsequent handbooks, *Narkhoz 64*, *Narkhoz 65*, and *Strana sovetov za 50 let*, it is designated simply as the "chemical" industry. It was omitted from *Trud v SSSR*, but reappeared under a new title—the "chemical and petrochemical" industry—in *Narkhoz 67*. Again, the methodological section at the end of this handbook helps one to determine the difference from all previous listings, regardless of the name changes. The 1967 definition of chemical industry includes the production of "chemical reagents and especially (*osobo*) pure substances," and after many years in the light industry branch, "the production of rubber shoes." The 1967 classification revision correspondingly affected the definition of light industry, which now excludes the production of rubber shoes, and the employment figures in the handbook table (p. 207) are lower for each year shown than those reported in earlier handbooks. Although changes can be noted in the definitions of other branches of industry, employment data reported for the remaining branches not discussed above, i.e., electric power, coal, ferrous metallurgy, and food, are the same in *Narkhoz 67* as reported earlier.

The statistical handbook, *Narkhoz 68*, gives some different branch data for the years 1960 and 1965–67, but makes no changes in the data for 1940. As an example of the changes in the branch data reported in three recent publications, the annual average number of wageworkers in machine-building and metalworking in 1965 rose from 7,579,000 in *Trud v SSSR*, p. 85, to 7,591,000 in *Narkhoz 67*, p. 207, and to 7,797,000 in *Narkhoz 68*, p. 205, an increase of 218,000 persons. Upward adjustments of previously published data were made in electric power; timber, woodworking, and pulp and paper (although for some inexplicable reasons downward adjustments were made for some years for the subbranch, pulp and paper); construction materials; light; and food. Even figures for the "chemical and petrochemical industry," which had been created as a new branch-of-industry category only a year earlier, were changed for the years 1960, 1965, and 1966 (but remained the same for 1967).

The basis for these alterations, as cited in the notes to the table on all workers and employees in *Narkhoz 68* was the reclassification of industrial activities made in August 1967, which has affected the annual average numbers of workers and employees in industry, construction, and agriculture. This new, so-called "Unified Classification of the Branches of the Economy and the Branches of Industry" supposedly had been

taken into account in *Narkhoz 67*. The reported total numbers of workers and employees in the national economy as a whole have remained unchanged, but the numbers in industry and construction have been increased in amounts equal to the sum of the decreases in employment in the various branches of agriculture—state farms, subsidiary state agricultural enterprises (as given for its agricultural portion only and including a new subgroup, "other agricultural production enterprises"), and the unspecified "other" agricultural establishments. It is possible that this latter reduction in the unspecified agricultural establishments corresponds to the number of *hired* workers and employees engaged in industrial and construction work on collective farms.

Finally, as Table 8.3 shows, the number of wageworkers employed in the oil industry has not been reported since *Promyshlennost' SSSR* was published in 1964. Further, employment data for certain industries, including nonferrous metallurgy, the approximately fifty subbranches of machine-building and metalworking, and printing, have never been published.[21] According to L. Volodarskii, deputy chief of TsSU, the processing of annual reports on labor in 1966 included the tabulation of data for *250 branches and industries*.[22] If this procedure is still followed today, the gaps in the information made available to us are formidable indeed.

Data Available for Other Workers. Information by branch of industry about other categories of employment within industrial enterprises is very limited. Some data on ITR's (engineering-technical personnel) have been released in the postwar period. *Dostizheniia sovetskoi vlasti za 40 let v tsifrakh,* which was published in 1957, contained data on ITR's for 1928, 1940, and 1956 for the same six branches as those for which figures were available on wageworkers (Table 8.3), plus the chemical industry. Ten years later, *Strana sovetov za 50 let* presented data on ITR's for 1928, 1940, 1960, and 1966, and for seven slightly different branches of industry—coal, ferrous metallurgy, chemical, machine-building and metalworking, construction materials, light, and food. The ITR data reported in 1967 include the members of producers' cooperatives for all years. An extensive range of data on ITR's was published in *Trud v SSSR* for the same branches as shown in Table 8.3 for wageworkers. And finally, there has been some information on ITR's in the percent distributions of industrial-production personnel, by class

21. Secondary sources dealing with individual union republics occasionally publish absolute data for the four major subbranches of machine-building and metalworking and, somewhat more frequently, percent distributions of an unknown total for ten to twenty subbranches.

22. L. Volodarskii, *Sotsialisticheskii trud,* 1966, no. 3, p. 45.

of worker, reported in monographs dealing with particular branches and in local-area statistical handbooks.

No absolute data exist on the other classes of workers (salaried employees, apprentices, guards, and minor service personnel) by branch of industry. The percent distributions of industrial-production personnel are available, listing salaried employees and apprentices separately from wageworkers and ITR's, leaving the guards and minor service personnel as a combined residual. With the publication of *Trud v SSSR* a consistent set of data on the annual average numbers of workers and employees, by class of worker, has become available for the first time. Statistics are given (on p. 81) for 1913, 1928, 1932, 1940, 1945, and 1950–67. For all years prior to 1960, for which data are published for the first time, we can now derive the numbers of members of producers' cooperatives, by class of worker. No class-of-worker data for 1951—the perennial nonyear—had ever been published before. As in all other handbooks, the number of minor service personnel is combined with the number of guards. Separate figures have been found only in one secondary source for the year 1960. According to this source, the total of 473,000 should be divided into 212,000 minor service personnel and 261,000 guards.[23]

Data Available for Aggregate Industrial-Production Personnel. Statistics available on the aggregate category of industrial-production personnel also suffer from a lack of comparability and continuity. Thus, members of producers' cooperatives are included or excluded in the same manner as described above for wageworkers, and as can be seen in Table 8.4 no data are available for the years 1951–54, 1956–57, 1963–64, and since 1966. For about half of the branches of industry on which data are available, we have information for all years listed. In addition, *Trud v SSSR* contains information on employment by branch of industry, by republic, from which two branches of industry could be added to those listed in Table 8.4. The republics for which the data are reported on these two industries comprise the primary area of the USSR in which the industries are located. Thus, we could add peat industry employment (Belorussia) and shale industry employment (Estonia). These republican data are given only for three years, 1960, 1965, and 1966, but they also show the numbers of wageworkers and ITR's.

The relatively abundant data on industrial-production personnel by branch of industry tempts one to make direct comparisons with industrial employment figures for other countries. However, there are formidable

23. V. N. Iagodkin, ed., *Osnovnye zakonomernosti vosproizvodstva rabochei sily v period razvernutogo stroitel'stva kommunizma* (Moscow, 1965), p. 134.

problems in making such comparisons in respect of types of activities included in the various branches and of coverage of personnel categories. For example, as noted above, the practice in the USSR is to exclude employment in ancillary activities, i.e., the nonindustrial personnel in an industrial plant, and to include persons engaged in industrial activities of other nonindustrial organizations. In the United States, however, industry employment data include all persons employed in the plant, with the exception of force account (construction) personnel. Thus, plant doctors, nurses, teachers of training courses, administrators of company-owned housing, and others providing services or engaged in nonproduction related activities are included in U.S. industrial employment figures, but excluded from comparable Soviet statistics. Although it is difficult to document, it appears that about 10 percent of total employment in Soviet enterprises classified in industry are allocated statistically to other branches.

On the other hand, the industry branch includes large numbers of persons working in subsidiary industrial activities of other branches. A consistent set of statistics on subsidiary industry carried out in construction organizations has generally been available in all postwar *Narkhoz* handbooks, either as part of the section on construction or in a footnote to the overall table on the annual average number of workers and employees. The appearance of *Trud v SSSR* has added immeasurably to our knowledge in this area. In the table on total construction employment, a separate column is provided for persons employed in subsidiary industrial activities of construction organizations. Much of the data is new (for the years 1932–45, 1951–53, 1957, and 1966–67) or more detailed than what was available before. According to these data, for example, there were 7,217,000 persons employed in construction organizations in 1965, of whom 5,617,000 were engaged in construction-installation work, 475,000 in subsidiary industry, and 1,125,000 in transportation, the housing-communal economy, or other services (p. 121). The corresponding data reported in the basic worker and employee table of *Narkhoz 68*, p. 559, shows the construction figure to be 5,617,000 and "0.5 million persons" working in subsidiary industry of construction sites. These data on employment in subsidiary industry are not disaggregated by branch of industry, but it is likely that most are employed in the construction materials industry. The statistical handbook for 1968 gives changed employment figures for construction in 1965 and later years.

Narkhoz 68 contains much revised data on the numbers of industrial-production personnel for earlier years which show significant differences from figures reported in previous handbooks. A brief review of data in several of these handbooks will help explain the differences. In April

Table 8.4. Industrial-production personnel—years for which branch-of-industry employment data are given in statistical handbooks

Branch of industry	*Prom. SSSR*					*Trud v SSSR*				
	1958	1959	1960	1961	1962	1950	1955	1960	1965	1966
Total number of branches listed	56	49	56	50	56	38	38	38	38	38
Ferrous metallurgy	X	X	X	X	X	X	X	X	X	X
Enterprises for production of pig iron, steel, and rolled products	X	X	X	X	X					
Fuels	X	X	X		X	X	X	X	X	X
Coal	X	X	X		X	X	X	X	X	X
Oil extraction	X	X	X		X					
Oil refining	X	X	X		X					
Gas	X	X	X		X					
Peat	X	X	X		X					
Timber, woodworking, and paper	X		X	X	X					
Timber, woodworking, and pulp and paper						X	X	X	X	X
Logging	X		X	X	X					
Timber exploitation						X	X	X	X	X
Woodworking	X		X	X	X	X	X	X	X	X
Sawn wood	X		X	X	X	X	X	X	X	X
Plywood						X	X	X	X	X
Furniture	X		X	X	X	X	X	X	X	X
Paper	X		X	X	X					
Pulp and paper						X	X	X	X	X
Wood chemical and wood hydrolysis	X		X	X	X					
Construction materials	X	X	X	X	X	X	X	X	X	X
Cement	X	X	X	X	X	X	X	X	X	X
Lime, gypsum (alabaster), and other local binding materials	X	X	X	X	X					
Wall materials and tiles	X	X	X	X	X					
Prefabricated reinforced concrete, concrete structures, and parts	X	X	X	X	X					
Asbestos-cement goods	X	X	X	X	X					
Soft roofing materials	X	X	X	X	X					
Extraction and processing of non-metallic construction materials and light aggregates	X	X	X	X	X					
Glass and chinaware	X	X	X	X	X	X	X	X	X	X
Glass	X	X	X	X	X	X	X	X	X	X
Chinaware	X	X	X	X	X	X	X	X	X	X
Light	X	X	X	X	X	X	X	X	X	X
Textiles	X	X	X	X	X	X	X	X	X	X
Cotton ginning	X	X	X	X	X	X	X	X	X	X
Cotton textiles	X	X	X	X	X	X	X	X	X	X
Wool	X	X	X	X	X	X	X	X	X	X
Flax (linen)	X	X	X	X	X					
Silk (including silk reeling)	X	X	X	X	X					
Silk						X	X	X	X	X
Hemp and jute	X	X	X	X	X					
Knitted wear	X	X	X	X	X	X	X	X	X	X
Felt	X	X	X	X	X					
Garment	X	X	X	X	X	X	X	X	X	X
Leather, fur, and shoe	X	X	X	X	X	X	X	X	X	X
Leather	X	X	X	X	X					
Leather substitutes	X	X	X	X	X					
Leather luggage and haberdashery goods	X	X	X	X	X					

Table 8.4 (continued)

Branch of industry	*Prom. SSSR*					*Trud v SSSR*				
	1958	1959	1960	1961	1962	1950	1955	1960	1965	1966
Fur	X	X	X	X	X					
Shoe (including rubber shoes)	X	X	X	X	X					
Shoe						X	X	X	X	X
Food	X	X	X	X	X	X	X	X	X	X
Sugar	X	X	X	X	X	X	X	X	X	X
Meat	X	X	X	X	X	X	X	X	X	X
Fish	X	X	X	X	X	X	X	X	X	X
Milk and milk products	X	X	X	X	X	X	X	X	X	X
Vegetable oils	X	X	X	X	X					
Flour milling and grain cracking	X	X	X	X	X	X	X	X	X	X
Baking	X	X	X	X	X	X	X	X	X	X
Candy and confectionery products	X	X	X	X	X					
Macaroni	X	X	X	X	X					
Fruits and vegetables	X	X	X	X	X	X	X	X	X	X
Starch and sirup	X	X	X	X	X					
Tobacco, makhorka	X	X	X	X	X					
Alcohol						X	X	X	X	X
Wines						X	X	X	X	X
Tea						X	X	X	X	X
Electric power						X	X	X	X	X
Machine-building and metalworking						X	X	X	X	X

1969, only six months before the latest 1968 handbook was issued, the Central Statistical Administration of the RSFSR published its brief statistical handbook (*RSFSR v tsifrakh v 1968 godu*) which contains many indicators on the USSR as a whole. Among these (on p. 16) were the numbers of all industrial-production personnel (29.9 million) and industrial wageworkers (24.2 million) in 1968, which were comparable in scope and coverage to the figures published a few months earlier in *Narkhoz 67*. As noted above, the 1967 handbook had given branch-of-industry employment statistics which were in turn different from those published in the spring of 1968 in *Trud v SSSR*. Now *Narkhoz 68* not only alters the branch data again but also changes the aggregate figures for industry. The total number of industrial-production personnel in 1968 has been increased by over 525,000, of which the increase in wageworkers was more than 450,000. A comparison of the "old" and "new" series of figures for industrial-production personnel is given in Table 8.5.

Although the two series technically are discrete it is not unreasonable to combine the 1950–57 "old series" with the 1958–68 "new series"; in 1958, the "new series" is higher by only 190,000 or 0.91 percent. The initial rapid growth and then the subsequent leveling off of the differences between the two series probably indicate that the number of persons engaged in these activities which are now classified as industry for employment purposes likely were even smaller (absolutely and relatively) in the years 1950–57.

Table 8.5. Industrial-production personnel—comparison of "old series" and "new series", 1950 to 1968, annual average figures in thousands

Year	*Old series*	*New series*	*Difference*
1950	15,317	NA	–
1951	16,230	NA	–
1952	16,873	NA	–
1953	17,617	NA	–
1954	18,499	NA	–
1955	18,868	NA	–
1956	19,561	NA	–
1957	20,192	NA	–
1958	20,807	20,997	190
1959	21,400	21,670	270
1960	22,291	22,620	329
1961	23,475	23,820	345
1962	24,297	24,677	380
1963	25,057	25,442	385
1964	25,933	26,313	380
1965	27,056	27,447	391
1966	28,105	28,514	409
1967	28,997	29,448	451
1968	29,900	30,428	528

NA: Not available.

Sources

Old series
1950–66: *Trud v SSSR* (Moscow, 1968), p. 81.
1957: *Narkhoz 68*, p. 648.
1968: TsSU RSFSR. *RSFSR v tsifrakh v 1968 godu* (Moscow, 1969), p. 16.

New series
1958–59, 1961–64: Official materials of the International Labour Office.
1960, 1965–68: *Narkhoz 68*, p. 548.

The allocation and reallocation of employment described above can be illustrated in matrix form with data on total workers and employees (Table 8.6). Although prepared some years ago, this table probably remains completely accurate in all aspects but two. A partial adjustment should be made to account for the recently enhanced ability of TsSU to identify small-scale subsidiary industry in the nonindustry branches, as described above. Second, the abolition of the MTS's and RTS's, followed by the creation of *Sel'khoztekhnika* (the national agricultural supply and repair organization), must be accounted for.[24] The industry

24. *Narkhoz 62*, p. 568, and subsequent handbooks indicate that employment in Sel' khoztekhnika is statistically allocated to other branches of the national economy.

branch gained employment as a result of this reorganization, as workers and employees in repair shops of the new agency are explicitly incorporated within the figures for industry.[25]

Column 1 of the table represents the employment pattern by primary classification of the enterprises, organizations, or institutions, and line 24 represents the employment pattern by branch, as reported in the handbooks. Thus, of the 3,100,000 persons employed in the Ministry of Railways (line 8, column 1), the basic economic activity of the agency accounts for 2,000,000 persons (line 8, column 9), or only two-thirds of the total. Of the remaining 1,100,000, some 240,000 are employed in industrial enterprises of the Ministry (line 8, column 2). In turn, this latter number is combined with the 18,540,000 persons employed in primary industrial enterprises, 500,000 in subsidiary industrial enterprises of construction organizations as described above, 405,000 in subsidiary industry of retail trade agencies, and so forth, to derive the composite total of 20,000,000 persons employed in the industry branch.

Manpower statistics in the United States are comparable to those appearing in column 1. Soviet data most similar to U.S. establishment statistics are trade-union statistics (less the number of students included in the trade-union figures). Unfortunately, the last trade-union statistical handbook published for general distribution dates from immediately before World War II. Only scattered data have been released in the 1960's.[26]

Data Available for Worktime Statistics

Data on the worktime of industrial workers are published in a number of series. One series deals with the average number of days worked per year, another with the average scheduled number of hours per workday, and two recent series give the average number of hours per scheduled workweek. These data are collected each quarter in the enterprise labor reports, where the number of days and hours worked by all wageworkers, including the number of hours of overtime, are entered. Worktime data for other classes of workers are not collected. A day of work is counted for all persons who appear for work regardless of the number of hours actually worked. Annual, quarterly, or monthly average numbers of hours actually worked are not published.

A series of the average number of days worked by wageworkers for each of the years 1928, 1932, 1937, 1940, 1950, and 1955–68 can be constructed from *Vestnik statistiki,* 1957, no. 2, all *Narkhoz* handbooks

25. See *Trud v SSSR* (Moscow, 1968), pp. 24–25.

26. The best postwar source is I. N. Adaskin et al., *Spravochnaia kniga o profsouizakh,* 2d ed. (Moscow, 1967), 520 pp.

Table 8.6. An illustrative reconstruction of the processing of summary employment statistics, circa 1959: employment figures in thousands

		Enterprises and organizations reporting to TsSU, by primary classification	*Branches of the national economy*			
			Total enterprise employment (*1*)	*Industry (industrial-production personnel)* (*2*)	*Construction (construction-installation personnel)* (*3*)	*Agriculture* (*4*)
1	I	Industry	20,090	18,540	–	250
2	II	Construction	5,220	500	4,125	200
3	III	Agriculture	5,595	5	105	5,300
4		A.MTS (RTS)	950	–	5	905
5		B.State farms and subsidiary state agriculture	4,125	5	–	4,000
6		C.Other agricultural services	520	–	100	395
7	IV	Forestry	480	–	10	90
8	V	Railroad transport	3,100	240	110	25
22	XV	State and economic administrative organs and public organizations	625	–	–	–
23	XVI	Other branches (capital repair, drilling, project-survey organizations, and others)	783	–	–	5
24	XVII	Total branch employment	55,000	20,000	4,600	6,100

This matrix was constructed in four basic steps:

(i) Control figures for each branch of the national economy (line 24) were estimated by averaging the reported annual average employment of workers and employees in 1958 and 1959;

(ii) Estimates were made for those cells for which such estimates could be derived from reported figures for the two years or from earlier information adjusted to the period 1958–1959;

(iii) Rough estimates were made for those cells for which employment data had not been

since 1962, and *Trud v SSSR*. In addition, for 1963 and 1964, such data are available for industrial wageworkers in seven branches of industry.[27]

Statistics on the average scheduled number of hours per workday, by branch of industry, were published in each *Narkhoz* handbook from 1958 through 1965. For the period of time which these data cover there

27. *Vestnik statistiki*, 1964, no. 8, p. 87, and 1965, no. 10, p. 89.

MTS (RTS) (5)	*State farms and subsidiary state agriculture* (6)	*Other agricultural services* (7)	*Forestry* (8)	*Railroad transport* (9)	*State and economic administrative organs and public organization* (23)	*Other branches (capital repair, drilling, project-survey organizations, and others)* (24)	
–	250	–	–	275	150	25	1
–	200	–	–	25	95	–	2
900	4,005	395	–	–	17	45	3
900	5	–	–	–	5	10	4
–	4,000	–	–	–	10	35	5
–	–	395	–	–	2	–	6
–	90	–	350	–	5	5	7
–	25	–	–	2,000	75	270	8
–	–	–	–	–	620	–	22
–	–	5	–	–	13	755	23
900	4,800	400	350	2,300	1,275	1,115	24

found or estimated, but for which employment is known to be reported by the enterprise or ministry. Even though generally based on the estimated distribution of enterprise employment, assignment of orders of magnitude was essentially arbitrary; and

(iv) The horizontal totals (enterprise employment) were balanced with the vertical totals (branch employment) by means of a raking process.

Source: For full table see, Feshbach, *The Soviet Statistical System Since 1957* (1962), pp. 68–69.

is nothing better, but they must be used with caution inasmuch as they reflect only the scheduled, not actual, number of hours worked by adult wageworkers. This reference to adults means that the data exclude time worked by youths under eighteen years of age, who are authorized a shorter workday.

Beginning with *Strana Sovetov za 50 let* and continuing with *Trud v SSSR, Narkhoz 67* and *Narkhoz 68* TsSU has published a new worktime

series—the average length of scheduled workweek. This switch to workweek rather than workday data reflects the impact of the March 1967 directive which established a five-day workweek, but retained the same total authorized number of hours of work per week. The new program requires a longer workday, and statistics published on this basis would not be considered desirable by the Soviet statistical authorities.

Percent distributions of adult workers and employees, by branch of the national economy, branch of industry, and number of hours per scheduled workweek, are given in *Narkhoz 67*, pp. 663–664, *Narkhoz 68*, p. 557, and *Vestnik statistiki*, 1968, no. 10, pp. 32–33. The latter source also includes averages for wageworkers, by branch of industry, which are not published in the handbooks. There is a difference between the sources concerning the reference date for the figures. According to *Narkhoz 67*, the date is 3 January 1968, but the title of the article in *Vestnik statistiki* indicates that the figures are from a survey taken as of 1 April 1968.

More important has been the publication in *Vestnik Statistiki*, 1968, no. 9, of a table giving the average *actual* length of the workweek of industrial wageworkers, by branch of industry, in 1957, 1960, and 1967. For the first time we have data which are gross of overtime work and net of intrashift work stoppages and hours off for nursing mothers. It is possible to determine the effect of the difference between actual and scheduled workweek only for the year 1967. The difference for all industry was 0.2 hour per week (40.4 actual and 40.6 scheduled), and for machine-building and metalworking it was 0.5 (40.4 hours actual and 40.9 hours scheduled). The total number of hours worked in all of industry during 1967 actually was 4.8 million hours less than scheduled for all of industry, and in machine-building and metalworking it was 4.2 million hours less than that scheduled for this industry alone.[28]

Distributions of industrial wageworkers by shift are another form of worktime data. Survey materials for 1 August 1959 and 1962 and 2 August 1965 have been released in a number of handbooks and journals. Data from these surveys have each been reported in a handbook two times and then dropped. They are presented as percent distributions of the number of workers in each of four shifts. In addition, shift coefficients computed as the total number of workers divided by the number of workers on the first shift are reported for both all shops and basic shops.

In assessing the quality and usefulness of these statistics, one must not overlook the fact that data published in the house organ of TsSU,

28. Derived as the resultant of multiplying employment reported in *Narkhoz 68*, p. 205, by 52 (weeks) and by the appropriate average numbers of hours reported in *Trud v SSSR*, p. 239, and *Vestnik statistiki*, 1968, no. 9, p. 85.

Vestnik statistiki, are often more detailed than similar data given in the statistical handbooks. Thus, in regard to the distribution of industrial wageworkers by shift as of 2 August 1965, the *Vestnik statistiki* of November 1966 provides figures for about 35 more branches of industry than the 16 listed in *Narkhoz 65*, p. 572, and the 17 listed in *Trud v SSSR*, p. 233.[29] Also, survey data as of 1 June 1967 were published in *Trud v SSSR,* pp. 235–36, *Narkhoz 67,* pp. 661–62, and *Vestnik statistiki,* 1968, no. 2, pp. 92–96. The latter source contains data for one major branch of industry (nonferrous metallurgy) and 17 additional subbranches (9 in maching-building and metalworking, 5 in the food industry, 2 in light industry and 1 in the construction-materials industry) which were not reported in the handbooks. In addition, data by republic were published in the journal.

Statistics as of several dates (5 May 1953, 1 April 1957, and 1 June 1963) have been published on the uninterrupted length of service of wageworkers, by branch of the economy and branch of industry.[30] These data provide distributions of persons who have worked less than 1 year, from 1 to 3 years, from 3 to 5 years, and then for 5- or 10-year intervals, with an open-ended grouping beginning at 25 years and over. As in other instances, the statistics in the journal are more detailed than those in the handbooks. A survey taken on 1 June 1967, was designed to obtain new and additional data. For the first time, statistics of length of service were to be collected, by class of worker and sex, in the production branches (industry, construction, transportation, and agriculture). These statistics, which were to be obtained only for permanent personnel, have not as yet been published.[31]

Data Available for Occupational Statistics

Occupational surveys of industrial wageworkers have been conducted many times in the postwar period—every year from 1947 through 1951, 1953, 1954, 1959, 1962, and 1965. These surveys have covered about 90 percent of all workers in industry. In addition, they have covered persons working in other branches of the economy.[32] The 1965 survey covered 19,695,000 wageworkers. Beginning with the brief table in

29. The journal also provides unique data on the distribution of wageworkers by branch of industry and by the number of shifts in which they work permanently. That is, 38.6 percent of industrial workers work in one shift, 31.0 in two shifts, 27.1 in three, and 3.3 in four shifts. Presumably these data represent very closely the actual pattern of distribution of industrial enterprises by the number of shifts. *Vestnik statistiki,* 1966, no. 11, p. 88.

30. *Narkhoz 59,* p. 671; *Vestnik statistiki* 1964, no. 4, pp. 94–95; and *Narkhoz 63,* p. 485.

31. O. Shafranova, *Vestnik statistiki,* 1967, no. 4, p. 49.

32. See my two studies on labor reporting; O. Shafranova, *Vestnik statistiki,* 1964, no. 2; and A. P. Kazanskii, "Statistika truda i zarabotnoi platy," in Ezhov, *Istoriia,* p. 330.

Dostizheniia Sovetskoi vlasti za 40 let v tsifrakh (1957), which gave statistics on the number of persons employed in certain occupations of the coal and machine-building and metalworking industries in 1925 and 1954 (15 and 10 occupations, respectively), a small amount of information on the occupational structure in industry has been released. The statistical handbook *Zhenshchina v SSSR* (Moscow, 1960) contained data on 31 occupations in the branch of industry as a whole. Three recent handbooks, *Narkhoz 62*, *Narkhoz 65*, and *Trud v SSSR*, contained statistics on 67 to 69 occupations in the industry branch from the surveys of 1 May 1948, 5 May 1954, 1 August 1959, 1 August 1962, and 2 August 1965. Information on nearly twice these numbers of occupations is contained in two issues of *Vestnik statistiki:* 1968, no. 8, gives the number of persons employed in 111 occupations as of 1 August 1962; and 1966, no. 6, gives the number of persons employed in 122 occupations taken from the surveys of 1959, 1962, and 1965. It is known that several seasonal industries were surveyed at times of the year different from those of the basic surveys. For example, the timber industry was surveyed in February 1954, whereas the other branches were surveyed on 5 May of that year. In 1962 and 1965 the timber industry was surveyed on 16 March and 15 March, respectively, and the peat industry on 10 June in both years. Thus, it is possible that workers in these industries who found employment in other industries between the different survey dates could have been double-counted.

A major problem in Soviet labor statistics has been the differentiation between basic and auxiliary workers. TsSU's instructions have called for recording the number of wageworkers in auxiliary shops separately. This number is not equal to the total number of auxiliary wageworkers, however, because it excludes auxiliary wageworkers employed in basic shops. According to O. Shafranova, a senior consultant of the Labor and Wage Statistics Department of TsSU, it was not until the 1965 survey that a "unified procedure was worked out to distribute wageworkers between basic and auxiliary wageworkers in all branches of industry."[33] On the basis of this survey, it was determined to classify 54 percent of all wageworkers as basic and the remaining 46 percent as auxiliary.

Information now available for the machine-building and metalworking industry provides a clear example of these different methods of classification. According to detailed data on wageworkers, by shop and occupation as of 1965, which were published in *Trud v SSSR*, there were 5,008,309 wageworkers (73 percent) employed in basic shops and

33. O. Shafranova, *Sotsialisticheskii trud*, 1966, no. 12, p. 118.

1,895,662 (27 percent) employed in auxiliary shops.[34] Grouped as basic and auxiliary wageworkers, these numbers change to 3.5 million basic wageworkers (51 percent) and 3.4 million auxiliary wageworkers (49 percent), a distinctly different pattern.[35]

Other occupational characteristics of the industrial labor force are to be found in the four *Zhenshchina* handbooks and in *Trud v SSSR*. The *Zhenshchina* series gives the proportion of women among all persons holding enterprise managerial and specialist positions such as director, chief engineer, shop chief, foreman, economist, planner, and statistician as of the beginning of 1957 (probably 1 December 1956) and 1 December 1961 and 1963. It is possible to derive the total number of persons employed in these occupations from data for the first survey only, because the numbers of women are given only in the first handbook of the series.[36]

Data from the survey taken as of 15 November 1966, which are presented in *Trud v SSSR*, p. 297, show, for 14 branches of industry, the numbers of persons who have higher or specialized secondary education and who are employed in the same occupations as those listed in *Zhenshchina*. The proportion of enterprise directors who have this level of education ranges from 99 percent in the oil-extraction industry to 57 percent in the garment industry. All (100 percent) chief engineers in the oil-extraction and petroleum-refining industries had this level of education, but only 83 percent of those in the garment industry.

Data on specialists (employed persons with higher or specialized secondary education) comprise a distinct type of labor statistics on occupations. The publication of *Trud v SSSR* in 1968 added considerably more information on the educational attainment of the labor force to that previously reported in the handbooks on education, *Vysshee obrazovanie* (1961) and *Srednee spetsial'noe obrazovanie* (1962), and in the national economy handbooks.[37] Information on employed persons with a higher education was collected in special surveys conducted every year during the period 1950–66 with the exception of 1958, and on employed persons

34. *Trud v SSSR*, pp. 198–209. This listing comprises 182 occupations. Similar detailed materials are available for coal mines (pp. 180–86), ferrous metallurgy (pp. 187–97), the construction materials industry (pp. 210–13), the textile industry (pp. 214–20), and the food industry (pp. 221–27).

35. Shafranova, p. 122.

36. For more information on female industrial employment statistics, see Norton T. Dodge, *Women in the Soviet Economy* (Baltimore: John Hopkins Press, 1966), passim.

37. See my comments on the labor handbook in *ASTE Bulletin* 10, no. 3 (Winter 1968), esp. pp. 7–8. Additional references to the overall level of educational attainment, by field of training, will be found in Ann S. Goodman, *Estimates and Projections of Specialized Manpower in the USSR, 1950–1975*, U.S. Bureau of the Census, International Population Reports, ser. P–91, no. 21 (Washington, 1970).

with a specialized secondary education it was collected every year during the period 1953–66. Surveys of both categories are now scheduled for two times every five years, beginning in 1968.[38] Data from these surveys are categorized as "by branch of the economy," but they should more correctly be called "by type of employing agency," for they represent all persons employed in the designated enterprises or organizations; thus they are not comparable to data reported by branch of the economy.[39] These data show the appropriate level of education among both the industrial-production personnel and the nonindustrial personnel of an enterprise. They do not necessarily depict an individual's current function (*dolzhnost'*), since they are based on the field of training in school, regardless of present job held. Only one survey (1 December 1963) is known to have collected specific information by *dolzhnost'*, which is so vitally needed for planning, but the data from this survey have never been published. It is not improbable that later surveys were designed to collect this information, although no reference has been found to this effect.[40] Data from the surveys usually are reported by major category—engineer, economist, lawyer, etc.; the only figures available by specific specialty are those for the various types of medical doctor. Thus, the amount of detailed information is small in consideration of the more than 400 specialties offered in higher educational institutions and the 450 given in specialized secondary schools.[41]

Data Available for Census Statistics

It is not feasible here to discuss extensively the information on industrial labor available from the 1959 census of population, but a few words are necessary. TsSU has never seen fit to provide us with totals by industry. Instead, we have a number of percent distributions (by education, age, and sex) of unknown totals. Occupational data are given, but they should be used with caution, since they describe the occupational spectrum within the primary enterprises of an industry or branch of the economy and must be manipulated to derive figures comparable with the usual branch statistics.

The quantity of data published is a pittance compared to the processed results. TsSU reported to the Conference of European Statisticians' Working Group on Population Censuses and Working Group on Elec-

38. Ezhov, *Organizatsiia*, p. 101, and Kazanskii, "Statistika," p. 334.

39. *Soviet Economic Performance*, pp. 76–78.

40. For more details on the survey itself, see Feshbach, *Soviet Statistical System* (1960), p. 56; idem, *Soviet Statistical System* (1962), pp. 30–31; V. Bykova, *Vestnik statistiki*, 1965, no. 10, pp. 55–58; and Goodman, *Estimates*.

41. See Goodman, *Estimates*, for a complete current listing of the specialties offered in these schools.

tronic Data Processing: "The processed results as a whole, in terms of printed pages of average newspaper size, amounted to about 400 volumes, each consisting of 1,000 pages."[42] Results published and made available outside the USSR comprise 16 volumes, most of which consist of between 100 and 200 pages.

In the 1970 census of population, for the first time in the history of Soviet censuses a 25-percent sample of the population will answer seven questions in addition to the eleven questions asked of the entire population. Among these sample questions are two items of immediate interest. Question 13 (i.e., item 2 of the seven sample items) will obtain information on the former occupation of pensioners. Question 14 will obtain from persons who worked an incomplete year in 1969 information on the permanency or temporary or seasonal status of their work, and the number of months they worked. In the 1959 census no time limit for work status was imposed on the response to a similar question, and the census results were thus biased upward.

Labor Productivity Statistics

Monthly labor plan fulfillment reports completed by industrial enterprises contain data on the actual gross value of output (*valovaia produktsiia*) in wholesale enterprise prices per one person in the industrial-production personnel category. Until 1960 this measure was reported as output per one wageworker. Many criticisms were made by Soviet economists, statisticians, and planners, however, to the effect that the number of wageworkers alone was inadequate for a productivity measure, since it omitted perhaps 20 percent of employment in the basic activity and allowed for maneuvering by enterprise managers to shuttle workers into other class-of-worker categories in order to increase productivity levels artificially and hide inefficiencies. The use of industrial-production personnel for measuring productivity closes this avenue of managerial flexibility, although the procedure of excluding nonindustrial personnel, as described above, is still available. Numbers of industrial-production personnel used by TsSU for this measurement are adjusted by the agency, and the simple manipulation of figures reported in the statistical handbooks cannot be used in an attempt to replicate Soviet calculations.

Another problem which has plagued Soviet statisticians and economists in computing labor productivity has been that of whether or not to include

42. Statistical Commission and Economic Commission for Europe, Conference of European Statisticians, Conf. Eur. Stats/WG. 6/134 and Conf. Eur. Stats/WG.9/73, dated 21 March 1968, entitled: "Organization of the Processing of the 1959 Population Census Data and Proposed Procedure for the Processing of the 1970 Census Data in the USSR," p. 2.

in the total number of personnel the youths under age seventeen who have shorter work hours and are less productive.[43] A special procedure instituted in 1964 to help overcome managerial resistance to hiring these young workers now allows managers to exclude them from the registered number of industrial-production personnel—although the output which they produce is included.[44] At present, seventeen- and eighteen-year-olds who are undergoing production training or are enrolled in factory-plant apprenticeship schools are also excluded.[45] Once having completed vocational-technical schools or apprenticeship programs, these persons are not shown among the number of youths, regardless of age, but are included in the number of industrial-production personnel. The effect of this exclusion of youths from the denominator of productivity calculations cannot be determined precisely. According to TsSU the proportion of youths (presumably under seventeen years of age) is about 1 percent of all industrial workers and employees.[46]

Employment in small-scale industry is included in the denominator (as is the output in the numerator) for productivity calculations. In *Promyshlennost' SSSR* (1964), p. 56, an explanatory footnote appears which to my knowledge has never been duplicated in other handbooks or in secondary sources. The note reads: "When calculating labor productivity indicators in this and the following tables, the volume of output and the number of workers and employees also include data from small-scale subsidiary enterprises (excluding collective farm enterprises). . . ." The difference, then, in the number of industrial-production personnel used in productivity calculations, as contrasted to the standard numbers published in the handbooks, is the inclusion of employment in small-scale subsidiary industry. The magnitude of this group is unknown, but some idea of its minimum level in 1960 can be gained from a report to a conference by N. Shteininger, then chief of the Industry Department of the Machine-Computing Station of TsSU RSFSR. In her description of the contrasting scope and coverage between *valovaia produktsiia* and what was defined as industrial employment used in productivity plans, she revealed that "in the Russian Federation as a whole, more than 1 million persons are not included in the scope for labor productivity. This is incorrect!"[47] Much of this employment probably is included now, due to the changed procedures for collecting data on small-scale, subsidiary industry.

43. Feshbach, "Manpower," p. 739.
44. V. G. Danilevich, *Spravochnik ekonomista po trudu* (Minsk, 1965), p. 314.
45. "Dopolnitel'nye," 1969, p. 10.
46. Letter from TsSU, dated 15 Oct. 1969. If seventeen-year-olds were included, this proportion would be 2.9 percent among all workers and employees in the national economy, and 4.1 percent in industry. TsSU, *Zhenshchiny i deti v SSSR* (Moscow, 1969), p. 158.
47. *Ekonomicheskaia gazeta*, 27 Nov. 1961, p. 30.

The inadequacy of the numerator in the Soviet productivity measure—*valovaia produktsiia*—is well known. For present purposes, the following quotation from an article written by the head of the Labor Productivity and Manpower Resources Section of the Scientific Research Institute of Labor, A. Golov, for the *International Labour Review*, should suffice:

> The index of gross production is calculated from the cost of finished products, of semifinished products to be completed, and of work and services of an industrial nature. This index is still used in the long-term planning of production and labour productivity growth rates. However, in undertakings where embodied labour is important, the index of gross production is distorted by a number of factors (the volume of raw materials per unit of output, differences in the prices of raw materials and other supplies, changes in supplies from co-operating plants and in inventories of unfinished goods, changes in the pattern of production, etc.).[48]

Despite admonitions such as this regarding the inadequacy of the gross-value-of-output measure, it is still retained in enterprise statistics and in planning of labor productivity. (For more details, consult Chapter 7 above.) An experiment is taking place in the enterprises of industrial ministries to determine the utility of the net value of output (*chistaia produktsiia*) in calculations of labor productivity, but all existing indicators used for estimating labor productivity are being retained, pending the results of the experiment.[49]

Productivity data for industry are published in all *Narkhoz* handbooks dealing with the national economy, industry, and labor. In general, two sets of data are given in the handbooks, one for the branch of industry as a whole, and one for individual branches within industry. A table presented in the summary section of the handbook provides information on the growth of labor productivity in industry as a whole (excluding collective farms), juxtaposed with productivity indexes for construction and railroad transportation. In the earlier handbooks, index numbers were provided only as calculated from numbers of wageworkers as denominators. Beginning with *Narkhoz 59*, an index was also published on the growth of productivity calculated from numbers of "working persons" (i.e., industrial-production personnel) as denominators. This

48. A. Golov, "Methodology of the Measurement and Planning of Labour Productivity in the U.S.S.R.," *International Labour Review* 97, no. 5 (May 1968), p. 449.

49. See 'O primenenii v opytnom poriadke metoda ischisleniia proizvoditel'nosti truda po uslovno-chistoi (chistoi) produktsii na otdel'nykh promyshlennykh predpriiatiiakh," *Biulleten' Gosudarstvennogo komiteta Soveta Ministrov SSSR po voprosam truda i zarabotnoi platy*, 1969, no. 6, pp. 3–9.

lasted until *Narkhoz 62*, which dropped the earlier series ("per one wageworker"). Since that time only *Promyshlennost' SSSR* has included the wageworker series.

During the period 1956–60, the number of hours of work per day was reduced, but the effect of this action on the measurement of labor productivity was not immediately noted. A brief mention of its impact on the ferrous metallurgy industry in *Narkhoz 58*, and a note on the change in labor productivity for industry as a whole, measured in terms of average output per 1 man-hour worked, was appended to the branch productivity tables in *Narkhoz 59*. Tabular presentation of these data was not made until 1964, when *Narkhoz 63* was issued.

Branch-of-industry productivity data were also calculated per wageworker until the publication of *Narkhoz 60*, when for the first time industrial production personnel were used. Three branches of industry—coal, oil, and logging—have continued to use wageworkers and to express the measure in real, not value, terms. All handbooks, beginning with *Narkhoz 60* (except for *Strana sovetov za 50 let*, 1957) adopted the pattern of giving indexes of productivity growth for the above three branches, plus ten additional ones: ferrous metallurgy, machine-building, chemical, construction materials, woodworking, paper, light, textile, cotton textile, and food. *Strana* omitted machine-building (but included machine-building and metalworking as a whole), woodworking, paper, and the two textile industries. *Trud v SSSR* included machine-building and metalworking in place of machine-building alone, dropped cotton textiles, and added electric power and the garment, leather, fur and shoe, sugar, meat, fishing, and milk and dairy products industries. *Promyshlennost' SSSR* (1964) included productivity indexes for all of these and fifty-two additional branches or subbranches.

An index of labor productivity for machine-building alone, as computed on the basis of wageworkers, can be found for the years 1940,1949, and 1950–59. Index numbers for machine-building output per one industrial-production person(nel) are available or can be derived for 1940, 1949–52, and 1954–68. For machine-building and metalworking as a whole, data for the years 1940, 1950, 1955, and 1958–67 are available from *Promyshlennost' SSSR* and *Trud v SSSR*. In addition, *Promyshlennost' SSSR*, p. 248, contains indexes of labor productivity for ten subbranches of the machine-building industry.

For a check on the aggregate index of labor productivity, data on the number of industrial-production personnel were combined with three different series of gross value of output: (1) In wholesale enterprise prices of 1 July 1955, excluding turnover tax; (2) in actual, existing wholesale enterprise prices (and plan methodology) of corresponding years; and (3) in wholesale industry prices of corresponding years, including

turnover tax.[50] Of the three derived indexes, the first, as expected, matched the reported index almost perfectly. In fact, for the period 1958–64 it was too close, given the caveats expressed above about the need to adjust the data on industrial-production personnel. After 1964, however, this index diverges, to a level in 1967 almost 3 percentage points from the reported index. The only acceptable explanation for this divergence is that the impact of the adjustments made by Soviet statisticians for youths and that portion of small-scale industry not previously included in the basic industrial-production personnel figures causes changes that we cannot calculate from the data available to us. (Year-to-year changes in the indexes, of course, would not be affected unless the proportions changed in each year.) The other two derived indexes deviated so far from the published index that no comparisons can be made.

In contrast to the changes in the employment series, the output and productivity series for both all industry and the individual branches of industry have remained unchanged. Does this mean that these series had already included the output of the "new" employment? If so, what is the meaning of the 1967 "change in branch classification"? Only one explanation seems feasible: that the numbers recently added to industry and construction represent the small-scale industry employment which has been statistically allocated to industry and construction for productivity calculations, but which was classified as part of agriculture in the general worker and employee tables of the statistical publications.

New Developments

New demands are being imposed upon TsSU for many kinds of data needed for social and economic planning. The contributions which demography and sociology can afford the planners have only recently been appreciated at higher levels of the Soviet government. In August 1967 a decree was adopted by the Central Committee CPSU on enhancement of the role of social sciences. This decree, among other things, called for TsSU to develop, jointly with Gosplan and the Academy of Sciences USSR, a "statistical data system necessary for social research, and to expand and specialize in the publication of these data."[51]

50. Sources for these data are *Trud v SSSR* (Moscow, 1968), and (1) *Narkhoz 65*, p. 121; (2) *Narkhoz 67*, p. 185; and (3) *Narkhoz 65*, p. 63, and *Narkhoz 67*, pp. 60 and 919. I am indebted to Mr. Stephen Rapawy of the Foreign Demographic Analysis Division, U.S. Bureau of the Census, for his assistance in preparing this material.

51. *Pravda*, 23 August 1967, p. 2. An example of the power of TsSU to curtail outside statistical operations, in particular in the area of social research, can be seen in the incident described in Feshbach, "Manpower," pp. 711–12. In this instance, the Kazakh Gosplan had designed and used a sample survey of motivations, skill levels, and interbranch movements of persons who had left their previous place of work. A telegram from Starovskii requested that the survey be stopped. Presumably, now that TsSU itself has received orders to supply this type of data, it will not issue a "cease and desist" order to other agencies desiring similar materials.

By the time the All-Union Conference of Statisticians met in Moscow on 22–26 April 1968, a "draft system of statistical data for planning, control over progress of fulfilling the plan, and scientific research in the area of economics, sociology, and demography prepared by the [special] commission of TsSU USSR" was ready for review.[52] Among the 43 items in all socioeconomic fields listed for survey during the years 1968–72, 12 pertain wholly or partly to industrial labor. Thus, during 1968, the Industrial Statistics Administration and Scientific Research Institute of TsSU USSR were scheduled to analyze factors influencing labor productivity (using a sample survey to collect data). A study of the reasons for labor turnover was to be performed jointly during 1969 by the Labor and Wage Statistics Department, the Industrial Statistics Administration, the Capital Construction Statistics Department, and the Budget Statistics Department of TsSU USSR. The influence of moral and material factors on productivity and product quality was also scheduled for study by TsSU RSFSR in 1969. And, changes in the occupational and skill structure of wageworkers are to be examined by the Labor and Wage Statistics Department of TsSU USSR during 1969–70. If the data and results of these studies are published we will have a much higher level of information available.

A. Ia. Boiarskii, director of TsSU's research institute, writing in the beginning of 1969, opened up the possibility of a new dimension in Soviet statistics—that of market research in the area of demand for labor. This would be, not in terms simply of data obtained through the standard plan fulfillment reports, but the economic analysis of trends for short-term forecasting. Among such forecasts which have been envisioned are monthly or quarterly demands for labor by enterprises.[53] If these should be released, an era of statistical abundance and analysis in the field of labor that we have not witnessed in the USSR for over forty years would be upon us.[54]

52. TsSU, *Vsesoiuznoe soveshchanie statistikov, 22–26 aprelia* 1968 g., *stenograficheskii otchet* (Moscow, 1969), pp. 457, 475–78.

53. *Ekonomicheskaia gazeta*, 1969, no. 6, p. 15.

54. The views expressed in this paper are those of the author and do not necessarily reflect the official view of the United States government. The review of this paper by staff members of the Central Statistical Administration of the USSR, through the courtesy of P. G. Pod"iachikh and A. I.Ezhov, is very much appreciated. Any errors in the paper are, of course, not to be attributed to them.

9

John H. Moore

Soviet Industry Statistics: Summary and Assessment

Chapters 7 and 8 provide fresh evidence on an old theme. Feshbach in Chapter 8 presents his readers with an exhaustive discussion of the currently available Soviet sources on labor statistics. His comments and caveats significantly add to the bibliographical value of the paper for students of the Soviet economy. In contrast, Greenslade in Chapter 7 presents an updated version of his and Phyllis Wallace's value-added index and gives a comparison with the official Soviet index (the *Valovaia produktsiia* or GVO index). Besides this addition to the data available on Soviet industrial production, he includes a very lucid discussion of the distortions of the GVO index. Each chapter merits being read in its entirety; to attempt to summarize them would be both ineffectual and presumptuous.

It is more useful to consider these chapters in the light of an old question: In solid knowledge of Soviet industry, are Western scholars any better off today than they were, say, ten years ago? A reading of the chapters lends fresh and persuasive evidence to the negative response. In discussing the problems involved in their different but overlapping areas, the chapters remind us that, despite the greatly increased volume of statistics now available, all of the familiar and fundamental problems of Soviet industrial statistics remain essentially unchanged. The publication of the *Narkhoz* handbooks, followed by *Promyshlennost' SSSR*, signaled the first genuine breakthrough in Soviet statistics since the virtual cessation of the publication of industrial statistics after the mid-1930's. The second breakthrough, that of providing a sound basis for knowledge of the meaning and significance of the published figures, still lies in the dim and unforeseeable future. If anything, recent events are discouraging as portents of that future. In this sense, students of Soviet industry are no better off today than they were a decade ago.

Of course, in terms of the sheer volume of numbers available, there has been a vast change since the mid-fifties, and the importance of this change should not be understated or underestimated. No longer must the researcher expend valuable resources in methodically searching miscel-

laneous books, journals, newspapers, and other reports, in the hope of assembling bits and pieces into a reasonable representation of the whole. Relatively speaking, vast quantities of numbers are now available. A more relevant question is whether the temptation to present results showing spurious precision and accuracy does not, on occasion, prove irresistible. It is clear that the scholar need be less a detective now than before the 1956 breakthrough.

Although new data are becoming available little by little, the volume of published statistics is minuscule compared with the quantity collected and actually compiled by TsSU, as Feshbach notes. In labor statistics, the 1968 publication of *Trud v SSSR* at first seems to represent the same kind of advance as did *Narkhoz* in other fields. However, as Feshbach shows, serious and elusive problems of comparability exist between *Trud v SSSR* and other sources, notably *Narkhoz 68*. What at first seemed justifiably to be a milestone in the postwar history of Soviet statistics, bringing together in one source many series on labor, now seems to be "of significantly less value as a source for both Soviet planners and economists and Western economists" according to Feshbach. On the other hand, additional data on labor are apparently becoming available from other sources. Feshbach provides citations of a number of articles, mostly in *Vestnik statistiki*, which increase the amount and number of series of data, particularly as regards working time. Fewer additions have been made in industrial statistics; Greenslade observes that the appearance of input-output data for 1959 and 1966 is "the only major new development in Soviet industrial statistics in recent years." Nevertheless, the flow of data has not actually been reduced, though that could happen at any time. All of this seems to be part of an increased willingness to publish statistics which Feshbach attributes to changes in the status of TsSU and its policies. It would be interesting to speculate about the reasons for these changes and about possible future changes, but it is inappropriate to do so here. In any case, there is no doubt that the cost of obtaining numbers to work with is as low today for the scholar as it has ever been.

All of this is, to outward appearances, an improvement in the state of statistical affairs. However, in the other and equally important aspects of Soviet statistics—their meaning and quality—no apparent advances have been made. Practically all of the familiar ambiguities, selectivities, and problems of misreporting are mentioned in Feshbach's paper, in this case in connection with labor statistics. For example, while employment data by industrial branch have been available in various statistical handbooks since 1957, variations in scope, branch classification, and branches covered "militate against the possibility of assembling consistent, his-

torical series of employment by branch." Another example discussed by Feshbach is the treatment of members of producers' cooperatives. These persons are omitted from the basic industrial employment tables in TsSU handbooks published prior to 1968, but included since then; this causes obvious difficulties in constructing comparable time series. Although data for certain industries (e.g., machine-building and metalworking, coal, food) have been reported regularly for a number of years, "[their] inclusion . . . is no guarantee of continuity in scope." In discussing the changes in designation of the industry once called the chemical industry, Feshbach (himself a very good detective, to judge by this chapter) shows that the researcher must, after all, still be part detective. Noting three different designations for this industry in the space of three years and three sources, he also shows that the statistical coverage of the industry sometimes changes when the definition changes and sometimes does not.

Again, data are selectively published. Feshbach notes that publication of wageworker data for the oil industry was stopped in 1964, and that similar data for some other industries have never been published. There can be little doubt that much of this is still the result of the use of statistics for propaganda purposes and of excessive secrecy. Feshbach cites the case of the 1967 shift to workweek rather than workday data in reporting worktime; he notes that had this not been done, the 1967 change to a five-day week would have resulted in a reported longer workday, which "would not be considered desirable by the Soviet statistical authorities." Some difficulties with the comparability of Soviet labor data stem not so much from the usual reasons as from Soviet accounting conventions, some based on Marxist ideology. For example, so-called "ancillary" personnel are not counted in employment in Soviet industrial enterprises, while they are counted in U.S. firms; on the other hand, persons working for nonindustrial enterprises but engaged in industrial work are counted as being industrially employed. Feshbach gives an educated guess as to the magnitude of the former group, but remains silent on the much more difficult question of the differential effects of this convention. All in all, a dismally familiar picture is painted in Feshbach's paper, and it is useful to be reminded of these problems. As for industrial statistics, Greenslade finds the picture dim enough to avoid all discussion of it: "there does not appear to be any significant change in [the coverage, detail or quality of Soviet reporting of physical output] since the exhaustive study by Grossman."[1]

As for the official Soviet indexes, nothing has been gained in credibility

1. Gregory Grossman, *Soviet Statistics on Physical Output of Industrial Commodities* (Princeton: Princeton Univ. Press, for NBER, 1960).

over the past ten or fifteen years. Greenslade says of the official industrial output index: "the major uncertainties persist. . . . [A]lthough we may feel that the GVO index overstates industrial growth, we cannot be very sure of the magnitude of the overstatement or of the probable causes of the overstatement." He takes note of the arguments that this index, despite its glaring faults, may still provide a reasonable representation of the trend in industrial production, but concludes that "an accumulation of indirect tests, inconsistencies, and testimony of Soviet writers, lends powerful support to the hypothesis that the GVO index still significantly overstates the growth of Soviet industry." Furthermore, it is still true that the factors which lead to this overstatement can be discussed only in qualitative terms. (It should be mentioned that Greenslade's compact summary of these factors is a very valuable part of his chapter.) For example, a recent addition to the collection of industrial statistics is an index which is labeled "net," which, if properly constructed, could shed light on the overstatement of the GVO index. However, this index gives largely the same result as the GVO over the period 1958–67. This makes the "net" index suspect. Greenslade presents other evidence that changes in double counting have inflated the GVO index, thus contradicting the implication of the "net" index figures. However, since "no explanation of the details of the construction of the index [is given in the source, *Vestnik statistiki*, 1969, no. 2] nor are official breakdowns for branches of industry provided," we must remain in the dark as to the reasons for the inconsistency. The well-known and still present distortions in the GVO index also make the official labor productivity index essentially meaningless, as Feshbach points out. As if this were not enough, that ubiquitous cause of distortion—that statistics are the basis for reward, as well as for planning and other purposes—affects the latter measure as well. Feshbach describes the shuffling of personnel among work categories so as to artificially inflate enterprise productivity figures, a practice which naturally distorts the official productivity index, again to an unknown (and unknowable) extent.

It is thus abundantly clear that all of the old problems with Soviet industrial statistics still exist, despite any changes in policy affecting, however slowly, the volume of publication. In fact, there is some evidence that things may be getting worse in this respect. The methodological notes, which occupied 42 pages of *Narkhoz 65*, have been omitted from *Narkhoz 68*. Thus one important source of clarification has been lost. In this respect, it is also noteworthy that the 1968 *Trud v SSSR* contains no section of methodological notes either. Whether this signals another change in policy remains to be seen, but it does not portend well.

All of this has a drearily familiar ring to it, and it certainly should not

be surprising in view of the fact that no fundamental change in the Soviet system has occurred since the first breakthrough in statistics took place in 1956. All of the institutional and motivational factors that caused distortions, omissions, exaggerations, and the like are basically the same today as they were then. Most people are now in agreement that the much-heralded economic reforms represent mere tinkering with the command system, the hue and cry in both the Soviet Union and the West notwithstanding. While there have been internal alterations in TsSU, Starovskii remains at the top after all these years and, more important, TsSU retains its virtual monopoly over the collection and publication of statistics. Despite the appearance and partial tolerance of a minute group of dissenters, there is no evidence whatever that the grip of the Party and its control over the fundamental aspects of economic and political life in the Soviet Union have been weakened in any way. The Soviet leadership still regards itself as carrying forth the banner of Marxism-Leninism; whether this attitude is formed out of ideological conviction or simple self-aggrandizement does not affect its impact on the use of statistics for propaganda purposes. If anything, the recent rifts within the Communist parties of the world would intensify this motivation for distortion. The second breakthrough in Soviet statistics cannot occur until basic change occurs in these factors, and that would appear to be a long way off.

IV

Agricultural Statistics

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Eberhard Schinke

Soviet Agricultural Statistics

A Brief History

In contrast with statistics for other sectors, the new Soviet government in 1918 was able to draw upon the agricultural data compiled by the *zemstvo,* which were excellent for that time. Indeed, present Soviet writers still regard these *zemstvo* data as the "best source for research into the socioeconomic structure of the prerevolutionary Russian peasantry."[1] The high quality of these agricultural statistics is in large part due to the fact that they were gathered by a large staff of specialists, whereas state statistics were collected in the main by laymen.

Although the organizational bases for *zemstvo* statistics were eliminated with the Revolution, their assembled data and their methodological and technical expertise remained for the benefit of the Agricultural Statistics Administration (Upravlenie statistiki sel'skogo khoziaistva) of the Central Statistical Administration (TsSU), which was set up in 1918. Following the *zemstvo* pattern, the emphasis remained on area, yields and livestock data during the civil war and the following period. This was to change in 1926, when the Agricultural Statistics Administration was severely criticized for not showing the social restructuring that had occurred and for concealing class distinctions in the countryside in its grouping of farms by sown area and by the number of animals. Moreover, it was accused of gross errors in its compilation of the grain balance for the year 1925/26.[2]

Starting with the 1926 reorganization of the TsSU, the ideological orientation of agricultural statistics came increasingly to the fore. The published data at least were to bear witness to the successful socialization of agriculture, the social and economic revolution in the countryside, and to pay homage to the fetish of mechanization. These trends are clearly shown in the publications of subsequent years.[3]

1. A. I. Ezhov, *Organizatsiia statistiki v SSSR* (Moscow, 1968), p. 8.

2. A. M. Brianskii, "Statistika sel'skogo khoziaistva," in *Istoriia sovetskoi gosudarstvennoi statistiki* (Moscow, 1960), p. 105.

3. Tsentral'noe upravlenie narodnokhoziaistvennogo ucheta Gosplana SSSR, *Sotsialisticheskoe sel'skoe khoziaistvo SSSR, Statisticheskii sbornik* (Moscow/Leningrad, 1939); idem, *Narodnoe khoziaistvo SSSR, Statisticheskii spravochnik* (Moscow/Leningrad, 1932), pp. 121–91; Lenin Academy of Agricultural Sciences, *Agricultural Statistics of the Union of Socialist Soviet Republics* (Moscow, 1930).

In 1930 the formerly relatively independent TsSU was subordinated to the USSR Gosplan, its powers in the field of planning and control over economic data were shorn, and many of its functions were transferred to the ministries responsible for individual sectors such as kolkhozy, sovkhozy, the MTS, and procurements.[4]

It was not until 1958 that all agricultural statistics came once more under the authority of TsSU, which had regained its operational independence some ten years previously and which had assumed responsibility for industrial and construction statistics in 1957. For the first time since 1939, comprehensive agricultural statistics were again published,[5] together with the regular all-union statistical yearbooks (*Narodnoe khoziaistvo SSSR* or *Narkhoz*). In 1960 the agricultural compendium *Sel'skoe khoziaistvo SSSR*[6] appeared, as did an agricultural atlas of the USSR, published by the Chief Administration for Geodesy and Cartography.[7] Since then, the statistical apparatus has grown and its methods of collection and evaluation have been refined. The quantity of data gathered grows constantly but, as Soviet specialists point out,[8] their reliability and comparability vary considerably.

Organization of Agricultural Statistics

The Agricultural Statistics Administration of TsSU, now as in 1918, enjoys an equal status with those for industrial and census statistics.[9] It is divided into seven sections. As in the Industrial Statistical Administration, the first is the general section (*Otdel svodno-ekonomicheskii*). The other sections cover land use and yields, animal husbandry, sovkhozy, state purchases, labor and costs, and—testifying to the importance of this sphere in the Soviet Union—water management. In addition, there are sections for kolkhoz accounting, and agricultural supplies and inventories, which are directly subordinated to the *kollegiia* of TsSU. Under these come the administrations and sections for agricultural statistics of the republican central statistical administrations, the oblast' and autonomous republic statistical administrations and the raion inspectorates.

Basic data stem primarily from the mid-year and year-end reports from

4. See in Chapter 2 of this volume the heading "The Changing Role and Position of TsSU."

5. TsSU, *Posevnye ploshchadi SSSR, Statisticheskii sbornik*, vols. 1 and 2 (Moscow, 1957); TsSU, *Chislennost' skota v SSSR, Statisticheskii sbornik* (Moscow, 1957).

6. TsSU, *Sel'skoe khoziaistvo SSSR, Statisticheskii sbornik* (Moscow, 1960).

7. Glavnoe upravlenie geodezii i kartografii ministerstva geologii i okhrany nedr SSSR, *Atlas sel'skogo khoziaistva SSSR* (Moscow, 1960).

8. See, for instance, the complaints by A. Pokinchereda, the head of the agricultural statistical administration of the SSSR TsSU in *Vestnik statistiki*, 1969, no. 10, pp. 26–34.

9. Cf. the description in A. I. Ezhov, *Organizatsiia*, pp. 48–49.

the kolkhozy and the state agricultural enterprises, from the *sel'sovety* reports on private livestock inventories and land area, from the random surveys of cultivation on private land and urban private livestock inventories and from the family budget surveys (*biudzhetnye obsledovaniia*) which are also carried out on a random basis. These latter provide information on output, yields, and livestock performance in the private farms belonging to all groups of the population. It would seem that the TsSU is dissatisfied with the quantity and quality of the data supplied by the most important of these sources, i.e., the regular reports from the kolkhozy and sovkhozy. Apparently the 1958 recentralization of agricultural statistics under the TsSU was not wholly implemented, since the specialist ministries concerned evidently still retain many powers in statistical matters. This is particularly true of state agricultural enterprises: only a portion of these come under the Ministry of Agriculture and the majority, especially small state farms, but including also many sovkhozy, are subordinate to a whole row of other ministries and authorities.[10] Each one of these demand differing data from their subordinate sovkhozy, and so far it has not proved possible for all sovkhozy to produce a standard annual report.[11] Moreover, each body which receives a copy of the annual report (such as the Ministry of Agriculture, Gosbank, and the Ministry of Finances) compiles its own raion, oblast', and all-union data and does not employ the statistics supplied by the TsSU.[12] Furthermore, TsSU is not even able to process all the data which it gathers on sovkhozy. On the contrary, it appears to have amassed an enormous and ever-growing pile of unused data which are urgently needed by the planners and by scientific bodies but which are not made available to them.[13]

Land Area

There are three categories of land area statistics: (i) classified by land users and above all, in the agricultural sphere, by state enterprises, kolkhozy, and private persons or families, (ii) classified by land use for nonagricultural and agricultural purposes, the latter being subdivided into arable land, pasture land, hay meadows, etc., and (iii) classified by cultivated areas broken down into types of crop grown.

Land Users. In the records compiled by the raion authorities, land

10. Cf. E. Schinke, *The Organization and Planning of Soviet Agriculture*, World Agricultural Economics and Rural Sociology Abstracts, no. 1 (Oxford, 1970).

11. K. I. Pankova, A. P. Vikhliaev, V. N. Volodicheva and M. M. Eizriker, *Ekonomiko-statisticheskoe izuchenie sovkhozov* (Moscow, 1969), p. 10.

12. Ibid., p. 12.

13. K. I. Pankova, *Vestnik statistiki,* 1967, no. 12, pp. 3–10.

users are classified into thirteen categories,[14] although the published area statistics are not so detailed. The latter usually cover just three groups: kolkhozy, state agricultural enterprises, and individual persons or families (kolkhozniki, workers, and employees).

The bulk of the area actually in private use comes under the heading of "kolkhoz land," since the private plots of the kolkhozniki are legally at the disposition of the kolkhozy; these plots account for more than half of all privately used land. Beyond these, official statistics do not disclose how much land belonging to the kolkhozy, sovkhozy, and the state land and forestry reserves is devoted to private production, above all for supplying feed for privately owned livestock. Probably no exact data are to hand for this area, since the use of land for such purposes is in part illegal. Apparently a relatively small proportion of the land area attributed to "other land users," such as towns, organizations, and nonagricultural enterprises, is used for private purposes.[15]

A distinction is generally drawn between the land areas in sovkhozy and those in "other state enterprises." Unfortunately, the statistical yearbook only occasionally provides figures for the latter category: this disturbing lacuna in Soviet statistics is repeated for headings other than land area.[16]

Data for the land areas cultivated by kolkhozy are also not quite uniform. It is true that most figures refer exclusively to the agricultural kolkhozy, but sometimes the totals also include the land areas in the nonagricultural kolkhozy, such as fishing kolkhozy. This error, which is often overlooked by observers, is also to be found for other indicators than land area, as is the case for "other state enterprises" noted above.

Land Use. The most important category here is the agricultural area: in the Soviet Union this accounts for a relatively modest proportion (only 52 percent in 1968) of all land belonging to farms. Agricultural lands consist of cultivated land (including clean fallow), pasture land, hay meadows, areas with perennial crops, and those which lie unused for long periods (*tselina, zalezh,* and *perelog*).

Excluded from the concept of agricultural area are the reindeer grazing lands in the Far North, although the criteria for distinguishing these are unknown. This and the distinction between pasture land and hay

14. A. I. Gozulov, V. P. Grankov and G. S. Merzhalov, *Statistika sel'skogo khoziaistva*, 2d ed. (Moscow, 1967), p. 23.

15. This is dealt with in Karl-Eugen Wädekin, *Privatproduzenten in der sowjetischen Landwirtschaft* (Cologne, 1967), pp. 221–30. The sown area attributed to "workers and employees" is for some reason always larger than their arable land. This cannot be attributed to the growing of more than one crop a year, since this is excluded by the fixed date of the survey taken.

16. "Other state enterprises" account for about 8 percent of the agricultural land of all state agricultural enterprises: see Schinke, *Organization and Planning*, Table 1.

meadows on the one hand and unused spaces on the other, are sources of uncertainty in estimating the real dimensions and structure of the Soviet Union's agricultural area. The figures for cultivated land cannot be very exact either, in view of the varying verges and the wastelands and eroded areas which are to be found throughout cultivated areas. In addition, deliberately falsified data are often given for the extent of the sown areas and the cultivated areas, with the aim of manipulating the yields or other success indicators.[17] Although these latter sources of error are of little significance in totals for large regions or for all-union totals, they can distort considerably regional data and especially any analysis of the statistics for individual farms.

The appraisal of area statistics is further impeded by the fact that no comprehensive land register has yet been completed. No agreement has yet been reached on the methods to be used for evaluating land, although this is basically accepted as feasible and as desirable, while estimates of agricultural lands by their soil characteristics and by their yield performances are not made in all instances. Thus by 1968 less than half of all Soviet kolkhozy and sovkhozy possessed exact data concerning the land they were using which would enable them to formulate exact and optimal plans for land use and especially for land improvement.[18]

Cultivated Land. Statistics for cultivated land are relatively complicated. No fewer than seven different totals are distinguished: (1) the area sown for the harvest of a given year, (2) the area sown in a calendar year, (3) the productive area in spring (recorded at the end of the spring sowing), (4) the corrected productive area (which embraces land drawn into use after the spring sowing), (5) the harvest area (which excludes areas lost during the summer), (6) the actual harvested area (which excludes areas not harvested for some reason or other), (7) the area under crops (productive area in spring plus winter-killed and not resown areas). If one takes into consideration the fact that during the sowing season farms have to submit a report every five days on the progress recorded in sowing, then it is not difficult to sympathize with all the complaints which arise concerning the enormous amount of paperwork entailed, much of which goes unutilized and some of which is even considered to be wholly superfluous by the responsible agricultural statisticians.[19]

"Sown areas" (*posevnye ploshchadi*) given in statistical reports refers to the productive area in spring, as stipulated in (3) above. This also includes secondary row crops sown between and under fruit trees, as well

17. Cf. Makhov and Zaitsev, opp. cit. in nn. 21 and 22 below.
18. S. Udachin, *Ekonomika sel'skogo khoziaistva,* 1968, no. 4, pp. 10–19.
19. N. Goncharev, *Vestnik statistiki,* 1967, no. 2, p. 22.

as first seedings on pastures plowed up, but not underseeds in annual crops.[20] These statistics are kept in great detail, covering about 250 different crops. However, only aggregate data are published; for instance, the areas under each kind of vegetable are not released. On the whole, the same is true for the perennial crops, for which published statistics distinguish only between "productive" and "nonproductive" areas, while no breakdown is supplied for the various kinds of fruit.

Despite the complicated system of overlapping reports and controls in the statistics for cultivated areas, errors are not excluded. Thus the head of the TsSU's section on land use and yields reported that a check of cultivated-area data in 1964 revealed that "now and then some of the areas sown to this, that, or the other crop (cotton, flax, rice, and other crops) are concealed from the reports in order to raise the yields artificially. To this end, most commonly overplan sowing is concealed."[21] Instances are reported from irrigation regions where the reported sown areas are to be corrected downwards by subtracting the space taken up by irrigation ditches and dikes.[22] Therefore Soviet data on cultivated areas, harvest totals, and yields per hectare are to be treated with caution.

Yields

At the December 1958 plenum of the CC CPSU, it was decided that the so-called "biological harvest" or "standing harvest" method of measuring crops and yields, which had been used hitherto, would be discontinued. This measure had led to an artificial inflation of grain yields of some 30 percent and to as much as 44 percent in 1949.[23] Since then, the gross harvest (*valovoi sbor*) has been given in terms of "factual weight" or "elevator weight"; where combines are used, the "bunker weight" is also given. These weights represent "the weight determined immediately after cutting," which means that they include all impurities and admixtures as well as any abnormal moisture content (the normal for grain is 14 percent.)[24] Distinct from these is the "net weight" (*chistyi ves*), which is determined after the crop has been cleaned and dried. The farms show this besides the "elevator weight" in their annual reports. Another category is the "accounting weight" (*zachetnyi ves*) credited to the farms by the state procurement agencies;[25] this differs only marginally from the "net weight."

20. *Narkhoz 67*, pp. 932–33.
21. G. Makhov, *Vestnik statistiki*, 1965, no. 6, p. 51.
22. V. Zaitsev, *Sel'skaia zhizn'*, 30 Jan. 1970, p. 3.
23. N. N. Zhivilin, *Sovremennaia organizatsiia statistiki zemledeliia* (Moscow, 1960), p. 70. Cf. also the subsequently brilliantly confirmed estimates of Naum Jasny, *The Socialized Agriculture of the USSR* (Stanford, Calif., 1949), pp. 541–50.
24. *Statisticheskii slovar'*, (Moscow, 1965), pp. 59–60.
25. Cf. the paragraphs "State Purchases," below.

It should be noted that totals given as "factual harvest" or "elevator weight" exclude all losses incurred in transportation and storage, and that —unlike the practice in other countries—batches of grain with differing levels of moisture content are all counted together. This means that grain production totals are artificially inflated, especially in regions where precipitation is common during the harvest period. The practice also leads to fluctuations in the reported harvests from year to year among different farms and even within the farms according to the amount of rain during the harvest. Statistics for corn are considerably more reliable than those for other grains, in that the weight is always adjusted to a comparable moisture content of 22 percent. This is explained by the fact that corn is harvested in the full, wax, or milk stage of ripeness, and any aggregate total for corn would thus be meaningless without adjustment.

The accuracy of the output figures for feed crops leaves something to be desired. In the first place, fewer testings for weight have been instituted here in the past when compared with marketed produce. Secondly, as has been noted, the boundaries between grasslands and forests, swamps, etc., are not always clearly defined, and this impedes the accurate measurement of output and yields. Finally, the possibility cannot be excluded that official returns understate the actual amounts of feed crops harvested in order to conceal the true amount of fodder taken for privately owned livestock.

For working out the yields per hectare, the total harvest is divided by the "corrected productive area." Thus the concepts of "harvested area" and "actual harvest area" (see "Cultivated Land," above) are not employed for calculating yields.

As in the case of cultivated areas, separate production and yield figures are not given for each individual crop. Often just global totals for all vegetables and fruits are published; yet it is hardly meaningful to combine output totals by weight for apples and raspberries or cabbage and tomatoes!

The statistical authorities base their interim and final output and yield data for the public sector on the current and annual reports from kolkhozy and sovkhozy. For their assessment of the performance of the private sector, they must rely upon random sample surveys of family budgets.[26] These very detailed surveys (the questionnaire for the 26,300 kolkhoznik families concerned, for instance, contains about 3,000 questions)[27] provide data on, inter alia, the amount of produce sold and consumed, inputs for production purposes, income from the private sector, and other matters of vital importance for agricultural statistics. The data obtained

26. See Chapter 14 of this volume, by Marshall I. Goldman.
27. *Statisticheskii slovar'*, p. 45.

from the random surveys are weighted and adjusted to represent the contribution of the entire private agricultural sector.[28]

Since the private sector accounts for only an insignificant share of the total output of food and feed grains, the sampling procedures employed are only of account in respect of such crops as potatoes, fruit, vegetables, and others which the private plots grow in appreciable quantities. Since most of these crops are grown on relatively small plots there exists a danger that the samples taken do not accurately reflect the true state of affairs. Yet, apart from sounding a note of caution, one can hardly make any comprehensive assessment here, since adequate data are not to hand concerning the choice of samples. Nevertheless, for crops such as potatoes which are spread over wide areas, it is clear that the measurement of several tens of thousands of samples is wholly adequate.

Livestock

A change was instituted in Soviet livestock statistics in 1965: the annual inventory-taking as of 1 January[29] was replaced by a less comprehensive procedure. Currently, the livestock inventories in the public sector are taken from reports of the kolkhozy and sovkhozy; private livestock holdings in the country are taken from the *sel'sovety* reports (*pokhoziaistvennye knigi, sel'sovetskie spiski*), while private livestock inventories in urban areas are estimated on the basis of 10 percent samples.[30]

Livestock statistics have been brought to a fine art. They distinguish not only between types of animal but also between the employments and the ages of each type of beast. For instance, there are ten subgroups of cattle and nine subgroups of pigs. Average annual inventories are kept as well as the 1 January count. Livestock inventories are also reckoned in terms of standard livestock units (*uslovnaia edinitsa krupnogo skota*) and standard livestock units for assessment of feed requirements (*uslovnaia furazhnaia golova skota*).[31]

28. A. I. Gozulov et al., *Statistika*, p. 159.

29. A detailed description of the former practice is given in Iu. E. Gaabe, I. I. Levitin, and A. N. Pavlov, *Statistika sel'skogo khoziaistva* (Moscow, 1964), pp. 113–19.

30. A. I. Gozulov et al., *Statistika*, p. 218.

31. The following conversion factors are used (see ibid., p. 171):

	Large animal units	*Large animal feed units*
1 bull, 1 cow, 1 horse	1.0	1.0
1 calf	0.5	0.6
1 pig	0.18	0.3
1 sheep, 1 goat	0.09	0.1

Unfortunately, only a very few of the above data are published. The all-union statistical yearbooks give only global totals of cattle (with separate figures for cows), pigs, sheep, goats, and horses. These totals are broken down by regions and by types of farm, but not by employment and age. Thus from the official data, only a reader who is acquainted with the specialist journals can estimate roughly how many sires there are, what the relationship is between dams and young, etc. Here errors can easily creep in, since many of the published data refer merely to individual farms or regions. Often much depends on the reader's intuition in distinguishing between experimental results and regular counts or between what is actually the case and what the author would like to see. What Abraham S. Becker has observed concerning the quality of source material for determining the national income[32] also holds true here. The published data also give no indication as to how many of the cattle and the horses are used for draft purposes. No mention whatsoever is made in the all-union statistical yearbooks of certain kinds of animals such as camels, donkeys, and reindeer. This yearbook (*Narkhoz 68*) still gives only a global total of all kinds of poultry. Why this is so is unclear: several regional sources, including the RSFSR yearbook, have long since given detailed breakdowns.[33] Data on reproduction, fertility, the fattening periods, etc., are regularly collected from farms, but are only occasionally published by regions. Animal inventories which are reckoned in livestock units are far more useful in many instances than mere head counts, but these are only seldom and unsystematically released in the specialized literature. Only a very crude estimate can be made of these by using the regularly published data on fodder consumption.[34]

Despite all the above lacunae, a fairly accurate picture of the livestock holdings of kolkhozy and sovkhozy can be put together from the multitude of fragmentary data available. Of great assistance in completing the jigsaw puzzle are pieces of information such as that from the RSFSR minister of agriculture to the effect that on the average in 1968 in the kolkhozy and sovkhozy in his republic, 83 calves were born per 100 cows,[35] or the figures in a table from an article by Lutsenko which show that the average productive life of a dairy cow in Soviet kolkhozy and sovkhozy is six to seven lactations.[36] Such tidbits do not usually refer to livestock in the "other state farms" and they generally exclude all privately owned beasts. Since the latter category accounts for a large

32. In Chapter 4 of this volume.
33. RSFSR TsSU, *Narodnoe khoziaistvo RSFSR v 1964 godu* (Moscow, 1965), p. 263.
34. *Narkhoz 68*, p. 411.
35. L. Florent'ev, *Ekonomika sel'skogo khoziaistva*, 1969, no. 9, p. 49.
36. A. Lutsenko, *Vestnik statistiki*, 1967, no. 5, p. 28.

proportion of total livestock inventories,[37] considerable uncertainty exists in any evaluation of the state of the Soviet livestock sector.

Animal Products

Data on the output and reserves of animal products are derived from the same sources as data on crops, i.e., from kolkhozy and state farms (since 1964 these have been obliged to submit a monthly "report on the output of animal products") and from family budget samples. However, since the private sector accounts for a large share of all animal products, the family budget samples assume a far greater significance than in the case of crop production. It is not known whether the questionnaires are honestly completed and whether the authorities apply any correction factors. Certainly their room for maneuver is limited. On the one hand, the statistical authorities are anxious to show a high total output and thus are prevented from understating the contribution from the private sector lest this should lower the total excessively. On the other hand, they want to demonstrate the superiority of the giant socialist farms and so they dare not record too high a figure for the average yield per animal in the privately owned herds lest this should show up the inferior performance of the beasts in the public sector.

It is not possible here to go into details of how output totals and the per animal average performances are calculated and recorded; instead, just a few peculiarities which may not be so well known in the West will be mentioned. Data on milk production include milk yielded by all milk-giving animals, i.e., cows, buffaloes, sheep, goats, reindeer, yaks, and horses, and yet do not make allowances for the differing levels of fat content. On the other hand, conversion to a standard fat content is made for the material balances which express all milk products in terms of milk; this is also done in the farms' regular reports.[38] Until 1957 the yield of milk per cow given in the statistics was derived by dividing total milk output by all cows; nowadays, only milking cows are used for this calculation; meat animals and draft animals are excluded.[39] The milk taken directly by calves from the milking dam is not included in milk-output figures. As far as data on wool production per sheep are concerned, it is pointed out that these are not wholly accurate in that the amount of wool produced during the year is set against the sheep count at the beginning of the year.[40] Data on wool production refer to

37. At the beginning of 1970, 26 percent of the cattle, 39 percent of the cows, 25 percent of the pigs and 24 percent of the sheep and goats were privately owned. *Izvestiia*, 25 Jan. 1970, p. 2.

38. A. I. Gozulov et al., *Statistika*, 214–15.

39. M. I. Manokhin, *Osnovy sel'skokhoziaistvennoi statistiki* (Moscow, 1965), p. 81.

40. A. I. Gozulov et al., *Statistika*, p. 191.

unwashed wool; if the sheep are washed before clipping, the weight of their wool is converted into an unwashed equivalent.[41]

Global Output

Soviet statistics give several kinds of global totals for agricultural output. The total value of everything produced in the agricultural sector, without excluding intermediate inputs, is called the gross product (*valovaia produktsiia*). The net product (*chistaia produktsiia*), on the other hand, consists of all newly created value in the agricultural production process, including labor inputs. Two other categories are to be found in the statistical yearbooks which have no direct Western equivalent: the marketed output (*tovarnaia produktsiia*) is that part of the agricultural product which is transferred to other sectors than agriculture, while the state purchases (*gosudarstvennye zakupki*) represent that part of the marketed output which is delivered to the state.

A comparison between these four categories is fraught with difficulties; these stem partly from technical and partly from methodological considerations. In the first place, only a few totals are given in value terms; most are just physical totals. Thus, for instance, detailed statistics are provided in the yearbooks on the state purchases of all important products, and yet these are expressed in money terms only for the kolkhozy and private producers, but not for state farms. Secondly, absolutely no data are published for certain categories: this is true for the net product and for the monetary value of the marketed output. Thirdly, it is evident that state purchase totals are measured in a different way from the other three global totals and are thus incomparable.

This reservation applies only to any comparison of physical totals and not to data on value of production, because value totals in each case are expressed in terms of prices actually paid. Yet information on value totals is even more scanty than data on physical totals. No regular statistics are published concerning the value of state purchases from state farms, the value of marketed output, or the value of the gross product by types of produce and by types of farm, nor are data given on the average costs of production. The complicatedness of the Soviet agricultural price system,[42] together with the lack of detailed figures on the volume of output and sales in the various price zones, makes it almost impossible for an observer to undertake an accurate money evaluation of the agricultural product, even with those producer prices which are known. Thus, apart from a few instances in which the juxtaposition of various isolated

41. *Narkhoz 68*, p. 935. However, the data on state purchases of wool refer to the so-called accounting weight; cf. "State Purchases," below.

42. On agricultural prices see Chapter 16, by Morris Bornstein, in this volume.

data produces conclusive results,[43] we are still obliged to rely upon indirect calculations and approximate estimates in this sphere.

Gross Output. In contrast with gross industrial output, gross agricultural output is calculated by means of the so-called gross turnover method (*metod valovogo oborota*). This means that some of the producer goods and material inputs produced on the farm are double-counted, once as the output of the farm branch producing them and again, indirectly, as inputs into the same or another branch of the farm. This applies to much of the means of production and especially to seed and feed. In view of the fact that Soviet farms are largely self-sufficient in these means of production and get only a small proportion of them from industrial manufacturers or from other farms, this double counting leads to an appreciable inflation of the true volume of output; the degree of overstatement varies from farm to farm and from region to region, depending upon the degree and direction of specialization. The double counting of feed results in a particularly marked overstatement of animal products and thus to an imbalance of the relationships between this sector and that of crop production. The share of animal products in the Soviet gross agricultural product, as portrayed in Soviet statistics, is therefore exaggerated and is not comparable with corresponding data from other countries which use other statistical methods. Soviet statisticians have already repeatedly pressed for a revision of this system,[44] but apparently without success.

The gross output consists of the following:

(a) The yield from all crops;
(b) Expenditures on harvests in the coming years (seed for the winter grain crop and for perennial crops);
(c) Sales of livestock;

43. Often Soviet specialists are not able to get hold of exact figures. Thus S. S. Sergeev, head of the statistics department of the Timiriazev Academy in Moscow, wrote that he was unable to place comparable values on the output totals of sovkhozy because of the large price differentials from region to region: *Ekonomicheskii analiz sel'skokhoziaistvennogo proizvodstva* (Moscow, 1968), p. 167. For an example of a Western estimate, see U.S. Department of Agriculture, ERS, *Europe and the Soviet Union: Agricultural Situation* (Washington, 1967), p. 114; further, R. E. Neetz, "Inside the Agricultural Index of the U.S.S.R.," *New Directions in the Soviet Economy, Part II-B: Economic Performance* (Washington, 1966), pp. 483–93; A. Kahan, "Soviet Statistics of Agricultural Output," in *Soviet Agricultural and Peasant Affairs*, ed. R. D. Laird (Lawrence, Kans., 1963), pp. 134–60, and L. O. Richter's Commentary, ibid., pp. 161–68.

44. A. I. Gozulov et al., *Statistika*, p. 240. An attempt at a revised methodology was made by Ia. B. Lapkes, *Tekhnicheskii progress i proizvoditel'nost' truda v sel'skom khoziaistve* (Moscow, 1968), pp. 122–25.

(d) Changes in the livestock inventories (young animals born, increase in weight in fattening cattle);
(e) Animal products (milk, eggs, wool, skins, etc.).

The gross output totals are based on the material balances for each individual product;[45] in a second operation, these physical totals are recalculated in terms of current prices and in constant prices of a given base year (for time series and for providing indices).[46] For the valuation in current prices, the prices actually received by the producer enterprises are employed. Since these prices in the Soviet Union are differentiated by the type of farm, by price zone, by plan quota and above-plan quota as well as seasonally for certain products, the current prices include greatly varying amounts for the same item. Produce used by collective and state farms is valued at prime cost, while that consumed by private producers (as assessed in the sample surveys) is valued at an average selling price. For the constant prices of a given year, a weighted average of the prices of the marketed produce and of produce consumed on farms is employed.

As far as the composition of an index is concerned, the method of valuation has only a limited influence, as D. Gale Johnson has established.[47] However, it can play a significant role in establishing the absolute level of gross output expressed in current prices, as well as the relationship between contributions of the various groups of products. In above-average harvest years, large quantities of above-plan purchases are made. Since above-plan deliveries qualify for premiums of 50 percent of the basic price for grain and up to 100 percent for certain products such as mutton in some regions, the value of output in such years grows disproportionately and is not comparable with that of other periods, even if the basic purchase price remains stable. This shortcoming is evident in the statistical yearbook for 1968, which juxtaposes the gross output value totals for 1965 and 1968: 36.3 million tons of grain were purchased in 1965, against 69 million tons in 1968.[48]

There are various other grounds for inaccuracies in determining the exact value of the gross agricultural product. Despite most detailed instructions,[49] problems of demarcation arise between purely agricultural

45. On the methodology of drawing up material balances, see L. I. Egereva, *Balans proizvodstva i raspredeleniia produktsii sel'skogo khoziaistva* (Moscow, 1963).
46. For a detailed account, see Iu. E. Gaabe et al., *Statistika*, pp. 220–28.
47. D. G. Johnson, "Agricultural Production," in *Economic Trends in the Soviet Union*, ed. A. Bergson and S. Kuznets (Cambridge, Mass., 1963), pp. 204–7.
48. *Narkhoz 68*, p. 317.
49. See, for instance, TsSU, Otdel balansa narodnogo khoziaistva, *Ukazaniia po raschetu valovoi i chistoi produktsii sel'skogo khoziaistva soiuznykh respublik za 1962 god*, mimeographed (Moscow, 1963).

production and processing activities which do not strictly count as agricultural output. One example is that of fibrous plants which emanate from the agricultural enterprise at various stages of processing.[50]

Net Output. The net output of agriculture, a component of the national income,[51] has been calculated since 1958 for each union republic and for the entire Soviet Union. It consists of the difference between the gross output and material expenditures that are used for production purposes (*material'nye proizvodstvennye zatraty*). This latter category covers everything used for production purposes, including depreciation, the value of means of production made in the sector (valued at prime cost), and expenditures on services rendered by third parties which are employed in the process of production. When the means of production belonging to farms are used for purposes other than agricultural, the sum in question is to be excluded; however, it is questionable whether this calculation is at all possible and, if so, how accurate. The sources used for calculating inputs are the farms' reports and the family budget samples for the private sector. Net output is also calculated both in current prices and in constant prices of a given year. The meaningfulness of the results thereby obtained is—quite apart from the general problem of the price relationships between industrial inputs and agricultural outputs—limited by the arbitrary division between "live labor" and "embodied labor." Since the former is excluded from the measurable inputs, the result is that a labor-intensive branch (as Soviet agriculture is, both in comparison with other agricultures and in relation to Soviet industry) makes up a relatively large share of the national income, while the progressive trend towards replacing labor by capital has the opposite effect, namely a reduction in the net output.

Marketed Output. Since this concept can be most confusing for outside observers, it would probably be best to make it quite clear at the outset what marketed output is not. It is not the same as the output sold (*realizovannaia produktsiia*); it is not the same as produce grown for the market; and it is not identical with marketable output.

The term "marketed output" covers all produce which leaves the farm *and* the agricultural sector which produced it. Thus it also includes the sales by agricultural producers to the state procurement agencies, including the seed loans returned to the farms by the state. It covers sales to the consumer cooperatives and to final consumers on the kolkhoz markets, as well as all the produce sold to their workers and employees by state agricultural enterprises. On the other hand, the produce sold

50. M. Kozlov, *Ekonomika sel'skogo khoziaistva*, 1960, no. 3, p. 42.
51. See Chapter 5, by Stanley H. Cohn, in the present volume.

by kolkhozy to their members only counts as marketed output when it is resold; it is not counted when the kolkhoznik consumes it himself or uses it for feed or seed in his private farm. This remarkable distinction between the consumption of a sovkhoz worker and that of a kolkhoznik stems from the fiction that the kolkhoznik is an independent agricultural entrepreneur; but nowadays this justification is held to lack validity. Recently, Soviet statisticians have criticized this method of calculating the marketed output,[52] and we may well see changes made in this sphere in the near future.

Apart from the produce which kolkhozniki purchase in their kolkhoz and use themselves, there is another and considerably greater part of agricultural output which remains outside the definition of marketed output. This category covers all the agricultural produce which is traded between agricultural enterprises, including those of the private producers. With the growing specialization of agricultural production, this category is steadily gaining in importance.[53] If it is added to the marketed output, the resultant total is the so-called "overall volume of marketed output" or "complete marketed output" (*obshchii ob"em tovarnoi produktsii* or *polnaia tovarnaia produktsiia*). This is a much more meaningful total, but it is unfortunately not included in published statistics and can be only indirectly and approximately estimated by external observers.

Another term which is often encountered in this connection is *tovarnost'*. This is the percentage share of the gross output which becomes marketed output.[54] In the preparation and justification of the collectivization campaign, the concept of *tovarnost'* played an important role in that the relatively high *tovarnost'* of the larger farms was favorably contrasted with the high proportion of produce consumed for their own needs by the small peasant holdings: this provided an economic justification for the conversion into large units.[55] Nowadays the concept is used as an indicator of the degree of specialization and of intensity of the farm. However, as it is subject to the same deficiency as the concept of marketed output, i.e., it excludes the so-called intravillage and intrarural turnover, it is a defective criterion of the degree of market integration achieved by a farm. For example, a seed-growing farm which delivers its output direct to other farms has a lower *tovarnost'* than a similar farm which markets its produce via the state trading organizations.

52. A. I. Gozulov et al., *Statistika*, p. 246.

53. On the problem of the so-called intravillage market, see K.-E. Wädekin, *Privatproduzenten*, pp. 107–9.

54. When calculating the *tovarnost'*, only the marketable portion is used and not the total gross output. Products which are wholly or in part unmarketable—hay, straw, silage, green feed, etc.—are excluded.

55. On this problem see J. F. Karcz, "Thoughts on the Grain Problem," *Soviet Studies*, 1967, no. 4, pp. 399–434.

It is quite curious to observe how Soviet statistics attempt, on the one hand, to show as high as possible a value of marketed output and *tovarnost'* for the sovkhozy and kolkhozy and on the other hand to unjustifiably reduce these indicators by excluding the turnover between farms as well as the produce sold to a considerable proportion of the rural population. As Table 10.1 shows, the resultant discrepancy between total output and marketed output is still appreciable.

Table 10.1. Total output and marketed output of salient agricultural products in the Soviet Union, 1968

Item	*Units*	*Total output*	*Marketed output*
Grain	mil.t.	169.5	75.2
Cotton	mil.t.	5.9	5.9
Sugar beet	mil.t.	94.3	84.2
Sunflowers	mil.t.	6.7	5.3
Potatoes	mil.t.	102.2	18.3
Meat (slaughterweight)	mil.t.	11.6	8.7
Milk & milk products	mil.t.	82.1	46.4
Eggs	billion	35.5	18.1
Wool (raw weight)	thou.t.	413	384

Source: *Narkhoz 68*, pp. 318, 320, 322.

State Purchases. State purchases are a part of the marketed output. In contrast with the latter, they do not include above-plan purchases by trade organizations or the turnover on the kolkhoz market. Generally speaking, no above-plan purchases are made of produce which requires industrial processing, such as cotton and sugar beet, and thus for these the marketed output and the state purchase totals are practically identical. However, for other produce these two totals can diverge considerably, depending upon the region and the yields.

Thus the volume of state purchases indicates even less concerning the real commercial performance of agriculture than that of marketed output. Yet these figures are particularly noteworthy in that they are the only amounts given in a standard weight for each produce (*zachetnyi ves*) and are used for calculating whether the kolkhozy and sovkhozy have fulfilled their plans, as well as being the basis for computing prices paid to producers.[56] Data are thus available on the physical volume of state purchases in which allowances have been made for the qualitative variations of the output and marketed output totals and which are therefore

56. Certain moisture and purity norms are in force for grain, sugar beet, oilseeds, flax, hemp, tobacco, potatoes, and cotton; some of these products are subjected to other quality criteria also. A certain fat content is laid down for milk, and an average content of pure fiber is specified for sheep's wool. Cf. Iu. E. Gaabe et al., *Statistika*, pp. 242–44.

comparable for different regions and for different periods. Unfortunately, these precise and comparable figures are released only for this one fragmentary category of "state purchases," divorced from any accompanying data on the corresponding gross weights. Thus from official statistics alone, no comparisons are possible between the state purchases and the other output and yield data, although estimates can be made on the basis of individual statistics scattered throughout the specialized literature.[57] Any evaluation of the relationships between the various categories of weight runs up against the problems outlined at the beginning of this section.

Labor Force

On the whole it is difficult to obtain exact data on the total labor inputs into the agricultural sector of any country, although statistics on the absolute number of persons employed in agriculture and their proportion of the total labor force are available for many countries. No precise figures are given for any of these categories in Soviet statistics. It is true that a very accurate determination is possible of the size of the labor force in sovkhozy stemming from the wage rolls kept there: an absolute figure is available for a key date, as well as monthly and yearly averages. But generally speaking, the only figure available for kolkhozy is the monthly total of "kolkhozniki who have participated in the work of the kolkhoz" (*chislennost' rabotavshikh kolkhoznikov*). This figure includes all who have put in at least one day's work in the kolkhoz during the given month. Published statistics usually give the annual monthly average of this figure (*srednegodovaia chislennost' kolkhoznikov, prinimavshikh uchastie v rabotakh kolkhozov*), which is an arithmetical, unweighted average.

In Soviet agriculture, however, there are marked seasonal variations in labor inputs and the degree of employment in kolkhozy. Whereas much of the kolkhoz labor force cannot find employment during the winter months on the farm, during the peak periods in the spring and summer vast numbers of seasonal workers and auxiliaries have to be brought in.[58] Thus the annual monthly average of those employed on a kolkhoz can only offer a very rough guide. Its validity is further impaired

57. See, for instance, N. Nimitz, *Soviet Government Grain Procurements, Dispositions and Stocks, 1940, 1945–1963,* (Santa Monica, Calif.: The RAND Corporation, 1964); J. F. Karcz, "Farm Marketings and State Procurements: Definitions and Interpretations," *Soviet Studies,* 1963, no. 2, pp. 152–66; Z. Tresorukova, *Vestnik statistiki,* 1965, no. 7, pp. 12–21.

58. In 1965, for every 100 "able-bodied kolkhozniks who participated in the work of the kolkhoz" in the non-chernozem region, there were on the average 29 seasonal and auxiliary workers. S. S. Sergeev, *Ekonomicheskii analiz,* pp. 181–82.

in that it embraces pensioners and juveniles as well as able-bodied kolkhozniki, without making any differentiation, and is thus higher than the total of "able-bodied kolkhozniki who have participated in the work of the kolkhoz." This latter statistic is entered in the kolkhoz's annual report but is not published in official sources. However, it is often cited in the literature, especially by authors concerned to show that not all able-bodied kolkhozniki have put in their obligatory days of work in the kolkhoz.

Of course, Soviet statisticians are well aware of this shortcoming in the labor force statistics.[59] This awareness explains the fact that, in any comparison of sovkhozy and kolkhozy, where the figure of workers and employees is given for sovkhozy, the corresponding total for kolkhozy—for want of anything better—is that of kolkhoz households (*kolkhoznye dvory*), i.e., the number of families belonging to the kolkhozy.

Data on the work force employed in the private agricultural sector are even less precise. Official statistics for these persons, covering the all-union and the larger regional totals, are given only in the census data. In the 15 January 1959 census, 9.9 million persons were classified as working exclusively in the private agricultural sector.[60] Just how many additional people devoted a part of their working time to private agriculture and how large this part was are matters very difficult to assess. The results of the regularly held family budget samples, which would give some indication of this labor input, are not made available. The evaluations derived from special surveys, which are being conducted by Soviet scientists more and more in recent times, generally refer only to the situation in strictly limited regions.[61] However, more representative data from wider samples are to be expected in the future. In 1968 an inquiry into labor inputs covered 1,036 kolkhozy with a work force of 684,000.[62]

The precise determination of the number employed in any sector is difficult enough due to the definitions of employment, but this problem is further compounded in Soviet agriculture by the fact that very many

59. One of the first critical Soviet works on this topic is I. S. Paskhaver, *Balans trudovykh resursov kolkhozov—Voprosy metodologii, metodiki i analiza* (Kiev, 1961). An attempt on accounting labor input in all categories of farms can be found in Ia. B. Lapkes, *Tekhnicheskii progress*, p. 277.

60. TsSU, *Itogi vsesoiuznoi perepisi naseleniia 1959 goda*, Svodnyi tom (Moscow, 1966), p. 96.

61. Cf., for instance, V. Ia. Churakov and L. I. Suvorova, *Ispol'zovanie trudovykh resursov v kolkhozakh i sovkhozakh* (Moscow, 1967). In another study, V. Churakov points out that no really comprehensive and authoritative investigation has been made into rural labor resources for thirty years. *Voprosy ekonomiki*, 1968, no. 1, pp. 40–49.

62. Details can be found in V. Gaevskaia, *Vestnik statistiki*, 1969, no. 8, pp. 19–25.

kolkhozy and sovkhozy run nonagricultural ancillary enterprises.[63] These ancillary or auxiliary enterprises turn out not only products directly connected with agriculture, such as farm implements and processed foods, but also industrial items and craftwork which have nothing whatsoever to do with the primary agricultural activity of the kolkhoz or sovkhoz concerned. Moreover, it is not possible to get accurate data concerning the number employed in these enterprises, since many of these people switch from agricultural to ancillary occupations or vice versa, depending on work availability.[64] Finally it should be mentioned that large Soviet agricultural enterprises, and particularly the kolkhozy, undertake many communal, cultural, and social functions which in other societies would fall in the province of the state or of local authorities. The number of people employed in nonagricultural activities is shown indirectly in the statistics;[65] however, the criteria for arriving at this figure are not known.

The few Western specialists who have delved deeply into the question of the labor-force statistics of Soviet agriculture[66] have had to reckon with a relatively large margin of error on the grounds given above. The precise number employed in agriculture is far more difficult to ascertain than in other branches of the economy. Above all, the lack of definitive data on employment in the kolkhozy and the private agricultural sector reflects adversely on all estimates of the quantity and the distribution of the Soviet labor force.

All the above reservations apply just as much and sometimes more to the calculations of labor productivity to be found in Soviet statistics. The annual percentage increases (or decreases) in agricultural-labor productivity are derived by dividing the gross output (see the paragraphs "Gross Output," above) by the average agricultural work force, as determined above: in state enterprises, from the wage lists, in kolkhozy, from

63. For example, 52 percent of all kolkhozy and 30 percent of all sovkhozy in the Gor'kii oblast' possess such ancillary enterprises. I. Chugunov and V. Berezin, *Ekonomika sel'skogo khoziaistva*, 1969, no. 12, pp. 25–28.

64. A. Pronin, *Ekonomika sel'skogo khoziaistva*, 1969, no. 4, pp. 39–50.

65. E.g., 1.9 million in 1968: *Narkhoz 68*, p. 446; see also *Trud v SSSR* (Moscow, 1968), pp. 124–25.

66. The standard work of reference here is N. Nimitz, *Farm Employment in the Soviet Union, 1928–1963*, Rand Memorandum RM-4623-PR (Santa Monica, Calif., 1965). See also the present author's related calculations in Schinke, *Measuring Productivity in Soviet Agriculture*, World Agricultural Economics and Rural Sociology Abstracts, no. 4 (Oxford, 1966), pp. vii–ix; M. Feshbach, "Manpower in the U.S.S.R.: A Survey of Recent Trends and Prospects", in *New Directions in the Soviet Economy*, pt. 3, *Human Resources* (Washington, 1966), pp. 703–88; J. W. DePauw, *Measures of Agricultural Employment in the U.S.S.R.: 1959–1966*, International Population Reports, no. 65 (Washington, 1968); K.-E. Wädekin, "Manpower in Soviet Agriculture," *Soviet Studies*, 1969, no. 3, pp. 281–305.

the "number of kolkhozniki who have participated in the work of the kolkhoz," and in the private sector, from the estimates of labor inputs deduced from the family budget samples. All in all, one can hardly disagree with the conclusion of a Soviet specialist in this field, that the data produced are mostly defective and that Soviet statistics have so far not been able to supply exact information concerning the level and the development of labor productivity in agriculture.[67]

Material Inputs

Capital Investment. From the published statistics, it might be concluded that total capital investment in Soviet agriculture as of 31 December 1968 amounted to 69.4 billion rubles; this was equivalent to 129 rubles per hectare of agricultural land or 2,700 rubles per "agricultural worker."[68] Two qualifications should be noted here: in the first place, the term "agricultural worker," as we have seen, is a somewhat vague concept, and secondly, Soviet statistics show the value of inventories and equipment at their purchase price and do not make allowance for depreciation.[69] The actual value is therefore considerably lower, although it is virtually impossible to arrive at a reliable estimate. It is true that global annual depreciation totals are published, but only isolated and unrelated data are available concerning the age structure of the equipment and its rates of depreciation.

As a result of valuing the means of production at purchase prices, the value of productive livestock is understated and that of machinery and buildings is correspondingly overstated. The share of the former in capital stock is still significant, amounting to 9.8 billion rubles,[70] and it would be considerably higher if only the productive livestock in the private sector were included. However, these, as well as all means of production in the private sector, are ignored in the official statistics of agricultural inventories and equipment.[71]

It is to be regretted that Soviet statistics give practically no information concerning the level of net investment or of its share in gross investment, although data are available from the farms' annual reports and from special surveys; indeed, studies are published which cite these sources.[72] These lacunae tend to conceal the fact that the volume of reinvestment

67. B. Braginskii, *Vestnik statistiki*, 1965, no. 11, pp. 47–57.

68. *Narkhoz 68*, p. 327.

69. Inventories and equipment on hand in state farms before 1 January 1960 and in kolkhozy before 1 January 1962 were valued at replacement cost.

70. This refers to the end of 1968; derived from *Narkhoz 68*, p. 327.

71. An exceptional case is the table on investments by branches of the economy, *Narkhoz 68*, pp. 522–23.

72. For instance, P. S. Loza, *Vosproizvodstvo i ispol'zovanie osnovnykh fondov v kolkhozakh* (Moscow, 1969).

grows steadily and, for certain important means of production, virtually absorbs the entire capital available for investment.[73]

Machinery, Traction Power, Level of Mechanization. The tractor park is an important indicator of the level of mechanization achieved in agriculture. In both Soviet and East European statistics, this is given in terms of units and in terms of 15-horsepower equivalents. The horsepower figure refers to the draw-bar capacity of the motor and not its power. Thus, at the end of 1968, Soviet agriculture was said to dispose of 1,821,000 tractors, with 103,500,000 horsepower or 56,640,000 draw-bar horsepower. In other words, the average tractor disposed of 56.8 horsepower or 31.1 draw-bar horsepower.[74]

If the capacity of other motors as well as that of draft animals is added to the tractor horsepower available, then the combined total is known as the "power supply" of agriculture (*energovooruzhennost'*): at the end of 1968, this was given as 9.3 horsepower per "agricultural worker."[75] In fact this figure should be somewhat higher, namely, 10.5 horsepower per agricultural worker. The official statistics are slightly understated in that the horsepower of a horse is reckoned as only 0.75 mechanical horsepower, which is about one-tenth of its true capacity.[76] The reason why the authorities adhere to this understatement is quite obvious; if they were to use the commonly accepted equivalents, then it would transpire that the power supply available in 1927/1928 was not re-attained until 1962, whereas official sources maintain that this level was reached before the Second World War. In fact, in terms of power supply per hectare of sown area, the pre-collectivization level has yet to be regained.[77] This fact is overcompensated by employment to capacity of tractors and combines, as is shown by their annual and daily performance.[78]

No precise statistics are published concerning the degree of mechanization of agricultural operations. Instead, a vague category of operations

73. Data on net investments in collective farms of the Nikolaev oblast' (Ukrainian SSR) in the years 1962–67 see in M. Ul'ianov, *Ekonomika radians'koi Ukrainy*, 1969, no. 11, p. 60. In a previous study, I drew attention to the fact that, given the capacity of the Soviet tractor industry, the point would be reached around 1970 when the number of newly delivered tractors would just suffice to compensate for the quantity of old tractors written off each year. Under such circumstances, the only way to increase the tractor park would be lengthen their working life. Schinke, *Die Mechanisierung landwirtschaftlicher Arbeiten in der Sowjetunion* (Wiesbaden, 1967), pp. 17–18. This supposition was recently confirmed by a Soviet source: I. Buzdalov, *Voprosy ekonomiki*, 1970, no. 2, p. 76.

74. *Narkhoz 68*, pp. 413, 415.

75. Ibid., p. 413.

76. For further details, see my investigation in Schinke, *Mechanisierung*, pp. 28–34.

77. Ibid.

78. *Narkhoz 68*, p. 417.

which are "carried out with the aid of mechanical power" is given. Yet when data are published concerning "harvesting of grain with the aid of a combine harvester," it should be noted that these do not specify how the straw is gathered or how the harvest is transported from the fields.

Fertilizers and Feed. The statistics for the delivery of mineral fertilizer to agriculture are relatively accurate. Indeed, figures are given for both gross weight and for nutrient content, which enables international comparisons to be made. The latter category shows that the nutrient content of much of Soviet-produced fertilizer is lower than the usual norms in West Europe and the United States.[79] However, allowance should be made for a considerable discrepancy between the amounts delivered to agriculture and the amounts which enjoy correct and timely application; moreover, there seem to be frequent instances of faulty accounting of fertilizer stock on the farms.[80]

Of the admittedly inadequate supplies of fertilizer which are available, the bulk is applied to intensive crops, while grain receives very little and most feed crops get none at all.[81] Yet the degree of application of fertilizer varies greatly even for intensive crops: a survey carried out by TsSU in 1964 showed that out of the 9,790 kolkhozy and sovkhozy growing sugar beet which were surveyed, 371 farms reported that they applied absolutely no fertilizer at all to sugar beet, and only 144 farms applied more than 350 kilograms per hectare.[82]

No data are published concerning the application of organic fertilizer. However, in 1964 it was asserted that only about half of the available dung in the Soviet Union finds its way onto the fields;[83] the rest remains unused, presumably owing to a shortage of labor and transport.

Statistics on the production and consumption of feedstuffs have been kept since 1957,[84] although the only data which are regularly published are highly aggregated. This makes it very difficult to assess the feed supply, which has always been and remains one of the greatest bottlenecks in Soviet agriculture.[85] Moreover, the accuracy of TsSU's data

79. *Spravochnik po material'no-tekhnicheskomu snabzheniiu kolkhozov i sovkhozov* (Moscow, 1965), pp. 589–609.

80. G. Makhov, *Vestnik statistiki*, 1965, no. 11, pp. 65–66.

81. See *Narkhoz 65*, p. 362; cf. also N. Baranov, *Ekonomika sel'skogo khoziaistva*, 1970, no. 3, p. 56. In 1965 in the Ukraine mineral fertilizer was applied to 38.5 percent of grain crop area, and also to only 73.8 percent of irrigated grain crop area: S. G. Krishtav, "Khimizatsiia zemledeliia v Ukrainskoi SSR." *Ekonomika i organizatsiia sel'skogo khoziaistva* (Kiev), 1967, no. 13, p. 9.

82. V. Maniakin, *Vestnik statistiki*, 1966, no. 7, pp. 10–11.

83. A. V. Romanchenko, "Reservy i puti povysheniia proizvoditel'nosti truda v zernovom khoziaistve," in *Puti povysheniia proizvoditel'nosti truda v sel'skom khoziaistve SSSR* (Moscow, 1964), p. 133.

84. A. Brianskii, *Vestnik statistiki*, 1966, no. 4, p. 31.

85. L. Florent'ev, op. cit., in n. 35 above, pp. 44–56.

on the feed supply is open to question, since trade in feedstuffs—which would be easy to measure—covers only a small proportion of the total. By far the largest share of feedstuffs is produced on the farms which consume them, and most of this is made up of grass and green feed which are difficult to quantify.

Production Costs and Labor Inputs

Prime Costs. The computation of production costs is a comparatively recent development in Soviet agricultural statistics. It was virtually ignored for many years, being overshadowed by the emphasis laid on maximizing output. A further factor was the absence of regular wage payments in the kolkhozy, which meant that no data were available on the cost of human-labor inputs. Instead, the statisticians resorted to evaluating labor inputs at the wages paid in sovkhozy, a practice which at least had the advantage of enabling a comparison to be made of the production costs in the two types of farm. Since 1963 the "factual costs" of labor in kolkhozy have been reported, i.e., the value of kolkhozniki's earnings from the public sector in cash and kind. Commencing with *Narkhoz 64,* the statistical yearbooks for a time published both sets of costs, but of late only the factual costs have been given. The differences between kolkhoz earnings and sovkhoz pay are no longer extreme, reckoned per unit of produce, and so the two methods of estimation would bring similar results. However, this applies only to the overall average of all farms, since variations in earnings levels and thereby in production costs can be very large for individual farms. Thus, for example, the differential between the highest and the lowest rates for manual workers and teamwork in a single oblast' (Kiev) in 1966 was reportedly 900 percent: the minimum was about 50 kopeks and the maximum was 5 rubles.[86]

Soviet statistics give the ruble cost per unit of weight of the respective product; however, as in the case of output and yield data, products of differing quality are lumped together. Since the quality of the product depends to a considerable degree upon the care with which it is planted, cultivated, and harvested, there clearly exists a close relationship—all other things being equal—between the value of labor applied and the quality of the product. Yet this relationship is not allowed for in Soviet cost statistics. Thus the published data on average costs permit a comparison of only limited validity for any given product, since quality factors are excluded. Of course, the problem of comparability is even more acute when Soviet production costs are set against those in other countries.

86. I. S. Paskhaver, *Statisticheskii analiz intensifikatsii sel'skogo khoziaistva* (Moscow, 1969), p. 32.

However, as Naum Jasny has demonstrated,[87] a fairly reliable comparison can be made with the aid of a variety of sources.

When assessing the cost relationships between individual products, another peculiarity of Soviet cost accounting should be borne in mind, namely, that overhead costs are generally distributed in direct proportions to labor costs.[88] One of the consequences of this procedure is that labor-intensive products are assigned greater overhead costs than are capital-intensive items. This cannot but have an effect upon, for instance, the cost relationship between milk production, where labor inputs are high, and the relatively highly mechanized production of grain.

Data on the structure of production costs are published only occasionally. Figures for the production costs of individual farms or of small regions can often be found in the literature, but rarely for the entire country.[89]

Labor Inputs. Regular statistics on labor inputs in the kolkhozy and sovkhozy have been published since 1957; before that, data were limited to the results of samples. Labor time is expressed in days, which can be of differing length,[90] rather than hours. This factor is perhaps of less significance in the sovkhozy, where, generally speaking, working hours are fixed. Nevertheless, even here it is debatable just how accurate the bookkeeping can be when tasks of so many different kinds can be carried out in different places in the same day. In kolkhozy, on the other hand, the length of the working day is purely arbitrary, and a workday is often equated with a *vykhodo-den'*, i.e., with every and any day upon which the kolkhoznik turns up for work, regardless of length.[91] Thus the data on labor inputs in kolkhozy should be treated merely as rough averages. Any estimate of the average length of a workday can also only be approximate, since the statistical authorities have to rely on data from those few farms which have been keeping a record of hours worked for some time now. Just how representative these figures are has still to be determined; it should, however, be noted that farms which keep hourly records are generally among the better-organized ones. More accurate data should be made available in the near future. Soviet statisticians and agricultural economists have long been agitating for worktime to be measured in

87. N. M. Jasny, "Production Costs and Prices in Soviet Agriculture," in *Soviet and East European Agriculture*, ed. J. F. Karcz (Berkeley and Los Angeles, 1967), pp. 212–57.

88. Cf. my study: Schinke, *Die Kostenrechnung in der sowjetischen Landwirtschaft* (Giessen, 1962), pp. 63–65.

89. All-union data for the period 1964–68 can be found in V. Khlebnikov, *Ekonomika sel'skogo khoziaistva*, 1969, no. 3, pp. 1–10.

90. B. Braginskii, op. cit., in n. 67 above, p. 48; A. I. Gozulov et al., *Statistika*, p. 274.

91. V. S. Kniazevskii, *Statistika ispol'zovaniia trudovykh resursov i proizvoditel'nosti truda v sel'skom khoziaistve* (Moscow, 1960), p. 22; A. I. Gozulov et al., *Statistika*, p. 283.

hours: this should have been introduced with effect from 1964, but according to the latest information[92] it will be made obligatory for all kolkhozy and sovkhozy from 1970 on.

The published labor inputs cover only work directly applied to farmwork and exclude most of the inputs of supervisory and administrative personnel, as well as inputs of workers in transport, repair, etc. The proportion of the total work force which is engaged in administrative functions is known to be relatively high. In the kolkhozy of the Stavropol krai in 1967, for instance, 14–16 percent of the personnel were engaged in supervisory and administrative functions.[93] And even the reported figures appear to be understated. Soviet specialists on farm organizational matters believe that the numbers of administrative and supervisory personnel given in the farms' annual reports (the figure for 1966 was 2.6 million) should be amended upwards by about 30–35 percent, since other farm personnel are employed to help with the periodic accounts.[94]

Conclusion

Despite the expansion and improvements in the collection and processing of data, especially during the past fifteen years, Soviet agricultural statistics leave many questions unanswered. Lacunae exist not only in the limited published data which are accessible to the general public but also in those statistics which are not disclosed and yet which are used for planning and other purposes by the authorities. The advantages which should accrue from the centralized planning and administration of agriculture and from the very large farm units have not been fully utilized in Soviet agricultural statistics. Thus Soviet scientists are justified in their complaints that so far it has not proved possible adequately to utilize the available data on yields and on land evaluation in order to make accurate prognoses of yields and for planning agricultural output throughout the sector and in individual farms.[95] Soviet sources give only few and inaccurate data on the number of farms, on their average size and their internal organization.[96] Hardly any data are available on results of farm activity. The figures which are published from time to time concerning profitability, productivity, and intensity are often erroneous, owing to methodological shortcomings in their computation. They are, generally

92. V. Khizhniakov, *Vestnik statistiki,* 1970, no. 2, p. 61.

93. V. Em, *Voprosy ekonomiki,* 1969, no. 5, pp. 126–32.

94. G. M. Loza and G. I. Budylkin, *Izvestiia Timiriazevskoi sel'skokhoziaistvennoi akademii,* 1967, no. 4, pp. 215–26.

95. I. T. Beliaev, *Differentsial'naia renta v SSSR* (Moscow, 1967); V. Kharchenko, *Ekonomika sel'skogo khoziaistva,* 1965, no. 10, pp. 76–83.

96. I. Lončarević, *Die landwirtschaftlichen Betriebsgrössen in der Sowjetunion in Statistik und Theorie* (Wiesbaden, 1969).

speaking, not only not comparable with foreign statistics but also often inconsistent internally, since Soviet agricultural economists and agricultural statisticians sometimes use varying definitions for the same concept. The fervor of the debates over these points is an indication of many factions' desire to get rid of the traditional categories and concepts which are ideologically biased or which are oriented towards the fulfillment of physical output targets. It is hoped that the few examples cited in this study[97] have illustrated the recent welcome trend towards a rationalization of Soviet agricultural statistics which has been inspired by a growing number of critical and analytical investigations.[98]

97. Ia. B. Lapkes, *Tekhnicheskii progress;* K. I. Pankova et al., *Ekonomiko-statisticheskoe izuchenie;* S. S. Sergeev, *Ekonomicheskii analiz.*

98. The author is grateful to Dr. K.-E. Wädekin for comments on an earlier draft of this chapter. Thanks are also due to Keith Bush for an excellent translation of the text into English.

11

Philip M. Raup

Some Consequences of Data Deficiencies in Soviet Agriculture

Soviet agriculture suffers from data overload, at the farm level and at intermediate and national levels. Too many statistics are generated, and they are often unsuited to the implementation of farm management or national planning objectives. This has resulted from the merging of historical trends, in prerevolutionary Russian governmental reporting and accountability practices, with postrevolutionary planning in terms of physical quantities and "material balances." The urge to enumerate was reenforced in the collective farm sector after about 1930 by over three decades of experience with the "workday" unit as the basic determinant of labor income. To this was added an elaborate system of incentive bonuses for both state and collective farms, calculated in terms of "above-norm" output for labor and management. The results resembled the piece-work wage-rate systems that have been a familiar part of the early stages of industrialization in many countries. It seems probable that no country in the twentieth century has generated so complex an array of agricultural data as has the Soviet Union. Yet these statistics are often more a barrier than an aid in management and planning. And they omit some of the most useful data required by a rapidly modernizing agricultural sector. This chapter will explore the nature of some of these deficiencies and the consequences for agricultural policies and farm management practices.

These interpretations draw heavily upon data supplied by other research workers, especially Jerzy F. Karcz, Arcadius Kahan, Nancy Nimitz, Alec Nove, Gregory Grossman, and Karl-Eugen Wädekin. These and other sources are supplemented by primary data collected in interviews with Soviet agricultural officials and farm managers during study tours of the USSR in 1958 and 1968. The interpretation of developments in the Soviet Union has also benefited greatly from interviews with farm managers and agricultural officials throughout East Europe, in the course

of research in Bulgaria, Czechoslovakia, Hungary, Poland, Rumania, and Yugoslavia in 1967 and in Czechoslovakia in 1968.[1]

The broad outlines of Soviet agricultural policy were dominated by the decision to collectivize in 1929.[2] The three-part structure that emerged comprised state farms, collective farms, and private plots. Table 11.1 sets forth the bare bones of this structure, in terms of number and size of farms, labor force, and livestock inventories for the average state and collective farm, in 1960 and in 1968.

Table 11.1. Selected comparative data for state and collective farms in the USSR, 1960 and 1968[a]

Item	*Unit*	*State farms*		*Collective farms*	
		1960	*1968*	*1960*	*1968*
Number of farms	farm	7,375	13,398	44,000	35,600
Averages per farm					
Workers[b]	persons	745	635	383	420
Sown area	hectares	9,000	6,700	2,700	2,837
	acres	22,239	16,556	6,672	7,101
Sown area per worker	hectares	12.1	10.6	7.05	6.75
	acres	29.8	26.0	17.4	16.90
Horned cattle	head	1,715	1,927	807	1,102
of which cows	head	689	687	286	391
Swine	head	1,715	865	609	597
Sheep and goats	head	4,280	3,962	1,612	1,558
Milk yield per cow	kilo	2,185	2,319	1,854	2,177

a. Computed from TsSU, *SSSR v tsifrakh v 1967 godu* (Moscow, 1968), pp. 82, 92, 93; and *Narkhoz 68*, pp. 373, 409, 424, 427, 438, 439.

b. For state farms, number of farm workers; for collective farms, number of collective farm households. A collective farm household, on average, provides approximately the equivalent of one man-year of labor to the collective farm.

Since 1960 state farms have increased sharply in numbers but declined in average size, both in terms of acres sown and number of workers. Much of the expansion in number of state farms in the 1950's had occurred in the "virgin lands" areas, where continuous cropping was attempted. A shift to summer fallowing in the 1960's accounts in part for the decline in average sown area per state farm. This decline was also

1. These research tours were made possible by support from the Louis M. and Maud Hill Family Foundation of St. Paul, Minnesota, and from the University of Minnesota, which is gratefully acknowledged.

2. The most recent, and best, account of this historic transformation is M. Lewin, *Russian Peasants and Soviet Power* (London: George Allen and Unwin, 1968). The French original, *La paysannerie et le pouvoir soviétique*, was first published in 1966 in Paris by Mouton.

due in part to the consolidation and conversion of (usually smaller) collective farms into state farms. The conversion of collective to state farms was accelerated by abolition of the machine tractor stations in 1958 and the subsequent financial crisis on collective farms when faced with the requirement that they buy their own farm machinery.

In both sown area and labor force, the average state farm in 1968 was almost 2½ times the size of the average collective. On average, a collective farm seeds 11 square miles of crop land each year, and a state farm nearly 27 square miles. These size data have significant implications for the kinds of statistics needed to implement management policies. They make clear the fact that a Soviet farm encompasses a wide range of land types and soil quality, even in a country noted for its vast sweeps of relatively uniform soils.

In spite of forty years of emphasis on farm mechanization the sown area per farm worker has declined since 1960, on both state and collective farms. Sown areas in 1968 averaged 17 acres per worker on collective farms, and 26 acres on state farms.[3]

In gross value terms, the trends since 1958 in agricultural output by sectors are shown in Table 11.2.[4] Over the eight years 1958–65, the gross value of output at constant prices remained virtually unchanged for collective farms, and for the private plots, while doubling for the state farms. During this time the resources available to the collective farm sector were significantly reduced, while those allocated to the state farm sector were greatly increased.

In percentage terms, collective farms in 1958 produced 47 percent of gross output, state farms 16 percent, and the private plots 37 percent. In 1965 the share produced by collective farms dropped to 42 percent, the state farm share rose to 26 percent and the private plots fell to 32 percent.

The most noteworthy fact revealed by these statistics is that state farms in 1965 accounted for only slightly over one-fourth of gross agricultural output, in spite of strenuous efforts over forty years to support and expand them as superior forms of socialist agricultural enterprises. Equally noteworthy is the fact that private plots, occupying only 1.4 percent of the agriculturally used land and accounting for only 3.2 percent of the sown area, had 31 percent of total livestock units in 1965, and produced 32 percent of gross agricultural output. Wädekin emphasizes

3. In the United States, the comparable figure for 1966 was 58 acres of sown area per farm worker. U.S., Congress, Joint Economic Committee, *Soviet Economic Performance, 1966–67*, 90th Congr., 2d sess., May 1968 (Washington, 1968), p. 32.

4. Karl-Eugen Wädekin, "Kolkhoz, Sovkhoz, and Private Production in Soviet Agriculture," in *Agrarian Policies and Problems in Communist and Non-Communist Countries*, ed. W. A. Douglas Jackson (Seattle: Univ. of Washington Press, 1971), p. 108.

Table 11.2. Gross production by sectors of Soviet agriculture, 1958–1965, in billion rubles in "comparable" prices as of 1958

(1)	*Total of socialized sector* (2)	*Kolkhozy* (3)	*Sovkhozy and other state-owned agricultural enterprises*[a] (4)	*Sovkhozy only*[a] (5)	*Private sector* (6)
1958	30.5	*ca.* 23	7.5	6.5	18.0
1959	–	–	8.2	7.0	–
1960	32.5	ca. 22.3	10.2	9.25	17.3
1961	–	–	12.5	10.6	–
1962	34.6	*ca.* 21.3	13.3	11.3	17.3
1963	31.6	*ca.* 19	–	10.5	16.4
1964	38.3	*ca.* 23	–	13.4	16.6
1965	38.3	23–23.5	14.8–15.3	13.8	18.0

a. Sovkhozy of the Ministry of Agriculture of the USSR constitute by far the greater part; the production of all other sovkhozy is minimal by comparison. As to the share of other state-owned agricultural enterprises, Venzher states that of the average socialized production from 1958 to 1962, the production of sovkhozy was 31 percent, of other state-owned agricultural enterprises 4 percent, and of the kolkhozy 65 percent. Recalculating to total production and including the private sector, we find these figures agreeing with those given in Table 11.2 above. V. G. Venzher, "Osobennosti kolkhoznoi ekonomiki i problemy ee razvitiia," in *Proizvodstvo, nakoplenie, potreblenie*, ed. V. G. Venzher, I. B. Kvasha, et al. (Moscow, 1965), p. 259. This implies a share of 85 to 90 percent of the agricultural production of the state sector for the sovkhozy and fits into the figures of columns 3 and 4 of the table above.
Sources: Production of sovkhozy is calculated from the numbers of sovkhoz workers: for 1958–62, *Narkhoz 62*, pp. 356 f.; for 1963, *Narkhoz 63*, p. 358; for 1964, 1965, *Narkhoz 65*, p. 424; and from the gross production per 100 workers as given by L. Sineva, "O fondootdache v sovkhozakh," *Voprosy ekonomiki*, 1966, no. 12, p. 42.

Production of sovkhozy including other state-owned agricultural enterprises is derived as follows: for 1962, calculated from total gross production of Soviet agriculture – 51.9 billion rubles; see *Narkhoz 65*, p. 260 – and its division by percentages as given by E. S. Karnaukhova in *Ekonomika*, pp. 29, 34; for 1965, the difference between kolkhoz production and all socialized production; for 1958–61, calculated on the basis of the figure for 1962 and the indices given in *Narkhoz 62*, p. 358. Total of socialized production; private production: calculated from the figure of 34.2 percent for the private sector as given by V. Maniakin, "Preodolet' otstavanie v razvitii sel'skogo khoziaistva," *Ekonomika sel'skogo khoziaistva*, 1965, no. 2, p. 10, and the figures of total agricultural production and the indices in *Narkhoz 64*, p. 247, and *Narkhoz 65*, p. 260; cf. the table in Karl-Eugen Wädekin, *Privatproduzenten in der sowjetischen Landwirtschaft* (Cologne: Bundesinstitut fur Ostwissenschaftliche und Internationale Studien, 1967), p. 22.

Production for kolkhozy: except for 1962 – percentage as given by Karnaukhova, *Ekonomika* – and for 1965 – percentage as given by S. Kolesnev, "Razvitie i ukreplenie kolkhoznogo stroia," *Ekonomika sel'skogo khoziaistva*, 1967, no. 2, p. 27 – all other figures are calculated from the difference between all socialized production and production of sovkhozy and other state-owned agricultural enterprises.

that private-plot holders are frequently able to use free hay, straw, and pasture generated by the collective farm. The inputs into the private sector are thus greater than is indicated by their proportionate share in agricultural land or sown area.

The Structure and Function of Soviet Farm Prices

The complexities of the Soviet agricultural price structure are outlined by Eberhard Schinke in Chapter 10 above. One of the most noteworthy shortcomings is the absence of a time series of prices received by farms, or "producer prices." This lack has been confirmed by interviews with Soviet agricultural research workers, who find themselves handicapped in their efforts to analyze farm responses to price incentives. Awareness of this deficiency is a recent development in the Soviet Union. As long as production plans were dictated, in physical product terms, prices played an accounting function but not a managerial function at the farm level. The sharp upward revision in farm product prices in 1965 was the consequence of a decision to make greater use of price policy to stimulate output expansion. The increase in prices for livestock products was especially marked.

The lack of a published time series of producer prices makes impossible any thorough analysis of the incentive effects of Soviet agricultural price policies. A foreign research worker is forced to rely on fragmentary data and partial analysis. Table 11.3 reports one effort at analysis, in terms of relative "farm gate" prices collected in interviews with farm managers in August 1968 in the Rostov-Krasnodar area (to the east of the Black Sea). For comparison, August 1968 prices are shown for Minnesota, in the USA. Both Minnesota and the Rostov-Krasnodar area are food-surplus producing regions, are relatively remote from major urban and industrialized areas, and are important producers of cereal grains and vegetable oils.

In interpreting the Soviet prices, two characteristics of farm price policy must be kept in mind: (1) Prices are set at the central planning authority level, may remain unchanged for several production cycles, and are subject to drastic episodic changes. The most dramatic recent change was in March 1965.[5] (2) Prices are designed to cover costs of production and are graduated by geographic zones, with different zones for different products. Zonal boundaries typically coincide with republic, krai, or regional (oblast') administrative boundaries. Within zones, some

5. See Naum Jasny, "Production Costs and Prices in Soviet Agriculture," in *Soviet and East European Agriculture*, ed. Jerzy F. Karcz (Berkeley: Univ. of California Press, 1967), pp. 216–28.

Table 11.3. Comparison of prices received by farmers in Minnesota and in the USSR, Rostov-Krasnodar area, August 1968

Product	*Unit*	*Minnesota (at local markets)*[a]	*USSR Rostov-Krasnodar area (at farm gate)*[b]
Wheat	bushel	$ 1.33	$ 1.96
Corn	bushel	.96	1.68
Hogs	cwt	18.90	51.00
Beef cattle	cwt	25.70	57.00
Milk, wholesale	cwt	4.35	6.55 (3.6% b.f.) 7.45 (4.0% b.f.)
Chickens	pound	0.055	.63
Eggs	dozen	0.27	.91

a. Minnesota Crop Reporter, St. Paul, Sept. 1968, prices for 15 Aug. 1968.
b. Obtained in interviews with state and collective farm managers near Rostov and Krasnodar, RSFSR, August 1968. Prices in rubles are converted at the official rate of ruble 1.00 = $1.11. Note that Minnesota farm prices are at local markets: the farmer bears the cost of transport, and any shrinkage (in the case of livestock). Soviet prices are net at the farm gate; the state procurement agencies bear the cost of transport and shrinkage. If the farms transport the product to market, they are paid transport costs by the procurement agencies.

price variation is possible if supported by economic studies showing wide deviation in production costs due to natural conditions.[6]

Because the official exchange rate of the ruble at $1.11 is inflated in terms of real purchasing power, the data from Table 11.3 cannot be used without major adjustments to make meaningful price comparisons for a given product between the USA and the USSR. But it is possible to use the data for an analysis of relative prices within regions of each country.

An example of this use of the data is given in Table 11.4, in which hog-corn and beef-corn price ratios have been computed for Minnesota and for the Kuban (Krasnodar). Although corn in the Kuban is not the dominant feedstuff for beef and hogs that it is in Minnesota, it is fed to these animals, sometimes as grain and for cattle often as green fodder, or ensilage. Corn yields per hectare in the Krasnodar Krai are among the highest in the USSR, and farm managers do have a limited freedom in deciding whether to sell their corn or feed it.

The prices in Table 11.3 and the ratios in Table 11.4 provide a rough estimate of the extent to which prices for animal products relative to field crops are higher in the Kuban than in Minnesota. In an economy guided by market prices, a hog-corn ratio of 30 and a beef-corn ratio of 34 would guarantee a rapid expansion in hog and beef feeding. Yet

6. Information from interviews with staff of the Novosibirsk branch office of the All-Union Institute of Agricultural Economics Research, Sept. 1968.

Table 11.4. Hog-corn and beef-corn price ratios, for August 1968[a]

	Price in $	*Ratio*
Hog-corn ratio		
USA, Minnesota		
Price of hogs per 100 lb	18.90	19.7
Price of corn per bu	.96	
USSR, Krasnodar area, the Kuban		
Price of hogs per 100 lb	51.00	30.4
Price of corn per bu	1.68	
Beef-corn ratio		
USA, Minnesota		
Price of beef cattle per 100 lb	25.70	26.8
Price of corn per bu	.96	
USSR, Krasnodar area, the Kuban		
Price of beef cattle per 100 lb	57.00	33.9
Price of corn per bu	1.68	

a. Data for Minnesota from *Minnesota Crop Reporter*, St. Paul, Sept. 1968 (data for 15 August 1968). For USSR, data from interviews with collective farm officials in the Krasnodar area, RSFSR, Aug. 1968. Price conversions at the official exchange rate of ruble 1.00 = $1.11.

red meats are in short supply in the USSR. Pork output in particular has been slow to recover from the disastrous decline in 1963–64, when pig numbers dropped from 70 million to 41 million. By 1966 pig numbers had recovered to 60 million, only to fall again to 49 million on 1 January 1969.[7]

One reason is that the emphasis in livestock management has typically been on numbers rather than on quality. It has been a goal of farm managers to have a big inventory of livestock on 1 January, the annual census date. As a consequence, cattle and hog numbers are often out of balance with feed supplies. In poor crop years, enforced grain deliveries tend to exhaust farm feed supplies, and managers must buy feed at very high prices. This has discouraged grain-feeding of livestock, in spite of nominal livestock/grain ratios that appear favorable. If feed must be purchased, the ratios are very unfavorable.

Although the Krasnodar and Rostov areas must not be taken as representative of the USSR, these differences in relative prices suggest that price signals in the Soviet agricultural economy are only weakly related to supply responses. Products that are keenly desired—red meats and eggs, for example—are high-priced by any standard; yet supply has consistently fallen short of demand. To understand some of the

7. *Narkhoz 68*, p. 393.

reasons for this failure of performance to match objectives it is necessary to look more closely at the framework within which production decisions are made in the USSR.

Data Deficiencies and the Evolution of Management Goals

Until quite recently statistical data were almost totally lacking in the Soviet Union to permit the realistic calculation of rates of rent on land and interest on capital. Land was the property of the state, and was assigned at no cost to farms, factories, or housing authorities. Although economic rent was appropriated by the state through mandatory delivery quotas, low procurement prices and (prior to 1958) the system of payment in kind for services of the machine tractor stations (the MTS), there was no overt calculation of economic rent. No opportunity cost for the use of land entered into the calculation of costs of production.

In using capital, a rate of interest was not used in computing the relative costs and benefits of different investment opportunities. Ingenious alternatives were developed to measure the relative attractiveness of different projects. These were usually based on some variation of the "pay-out period," or the number of years it would take to replace the original capital at the anticipated annual rate of profit or benefit. But there was no adequate price on time. Capital could be tied up in half-completed projects for long periods of time, and there would be no mounting interest charge to spur completion.

The abolition of the MTS in 1958 forced a reform in capital and credit policies. State farms and the MTS had received allocations of capital according to need, and in this sense have been referred to as "primitive socialist enterprises." With abolition of the MTS, the collective farms faced immediate credit needs to enable them to buy the old MTS equipment and needed new equipment. A system of bank credit has emerged, designed especially to serve the collective farms. Loans are available, but at artificially low interest rates. Production credit in the summer of 1968 was available at 2 percent, while the same banks were paying 3 percent on deposits by the farms.[8]

With no calculation of economic rent and no adequate price on capital (which is to say, no good measure of the time-costs of production), the factor pricing policies of the USSR resulted in acute distortions in economic activity. Product prices were set at levels believed high enough to cover costs of production on average farms in each production zone. With no charge for land, costs of production were understated on the best lands, or on lands near cities. The result was that lands with alter-

8. Interviews with state and collective farm managers in the Rostov and Krasnodar areas, August 1968.

native uses for urban or industrial purposes were used wastefully. With land left out of the reckoning, there was no price signal to flash a warning when land was being misused.

The lack of a functional interest rate has also led to long-standing distortions in production. There was no adequate price signal to warn that farm mechanization in the USSR was going too far and too fast in the 1930's. Millions of rubles were invested in farm machinery at a time when there was excessive farm labor in the countryside and few alternative jobs. Capital has been "cheap" in the Soviet Union, due in part to lack of an interest rate to use in computing the opportunity cost of capital, and depreciation. This delayed the development of a realization that "time is valuable," in an economy that was shifting rapidly from an agricultural to an industrial base.

The goals set for farm managers have reflected these data shortcomings. Throughout the war years and until the end of the 1950's the goal for farm managers in the USSR was to "maximize output per hectare." This was a physical goal, measured in kilograms, tons, and liters. It gave the individual farm manager no guidance in selecting among different products, and it was not intended to do so. Decisions as to what to produce were made by the planning authorities. The farm manager was given a set of delivery obligations for the different products, and it was left to him to use his available resources to meet these goals as best he could.

Following abolition of the MTS in 1958 there was a gradual change in management goals, and the target of "maximum output per hectare" was converted into a money equivalent. The new goal was to "maximize gross output," in money terms. It led to strange results. The farm manager often had little incentive to pick the cheapest input that would do the job. "Maximizing gross output" also led to an emphasis on high-valued products at the expense of lower-valued products which might still be important as food staples (potatoes, for example).

After 1966 a new management goal was introduced, the "maximization of gross income." In practice, this meant maximizing returns from farm product sales, minus the costs of purchased inputs. This is a Soviet version of "value added in production." It too led to strange results.

Labor cost is the principal component of value added. On state farms, labor is a "purchased input." But until quite recently this was not true on collective farms. To maximize gross income, or value added on a collective farm, it might pay to use more labor rather than less. Spreading manure by hand, for example, would yield a higher gross income to the farm than spreading it by machine. Where labor was rewarded by a share in gross income, the goal discouraged economizing on labor, and the manager might be tempted to substitute labor for machines.

Farm management decision making was also profoundly affected by assurances that accompanied the price increases of March 1965. Managers were told that prices would not be changed (and certainly not lowered) for five years. Procurement quotas were also guaranteed to remain unchanged for five years. These guaranteed prices and quotas were intended to reassure and protect farm managers. Instead, the guaranteed levels immobilized managers. Many have wanted to introduce changes, drop some product lines, or increase specialization. They have been inhibited from doing so by the rigidities of the price structure and delivery quota system.

The new management goal of maximizing gross income highlighted the potential conflict between labor force and management on collective farms. To prevent distribution of all available income in the form of wage payments, central planning authorities have retained direct control over the wages fund. For each farm, the annual production plan includes a fixed limit on the total fund that can be used for wage payments. Within each farm, the management sets a limit on the wages fund for each brigade, or subunit. Some control is needed, to prevent farm workers from bringing pressure on management to distribute all earnings as wage payments. In this fashion an awkward form of profit maximization has been introduced as a management goal.

A much more radical step has been taken with regard to land. On 13 December 1968 a drastic change in land legislation was enacted by the Supreme Soviet of the USSR, effective 1 July 1969. This law provided for the evaluation of land, set up a national cadaster or register of rights in land, and made it clear that compensation was to be paid for any land taken by the state. If land is taken from a farm for a highway, the farm is to be compensated. If a city expands and engulfs a collective farm, "city hall" or the housing authorities must pay compensation for the land taken. Fifty-two years after the "October Revolution," a price was finally to be put on land in the Soviet Union.[9]

Although implementation has lagged, the significance of this step is great. If the policy is carried out, it will enable the establishment of more realistic crop production and delivery targets by planning authorities and will provide farm managers with a better guide to wise use of land resources, especially in areas of encroaching urban uses. A more immediate gain may concern the planned "automatic extension of credit" to the collective farms. To obtain this automatic credit, the collective farm must submit its development plan for the coming five years. Given

9. For a translation of the complete text of the law, see *Current Digest of the Soviet Press* 21, no. 1 (22 Jan. 1969): 12–20. A basic background document is *Zemelnyi kadaster SSSR* (Land Cadaster of the USSR) (Moscow, 1967).

the principle of "no plan, no credit," the economic evaluation of land may give a firmer basis for the extension of credit on the strength of the plan. Collective farm officials in the fall of 1968 felt that this could well be one of the most significant improvements to result from the new land law.

Putting a price on land did not meet with universal acclaim in agricultural circles. Some farm managers and agricultural economists interviewed in 1968 feared that a price system that included land prices might be used by central planning authorities to restructure the old system of geographically differentiated quotas and enforced deliveries, in a new guise. Land prices based on reasonably accurate calculations of economic rent will point up the favorable position of those farms that are advantageously situated. Higher quotas may well be the consequence. Some of the agricultural economists of the USSR have not been enthusiastic supporters of the decision to price land.

In the long run, data to permit the calculation of economic rent and realistic rates of return on capital appear to be essential before true costs of production can be calculated by the USSR and its trading partners in the Council of Mutual Economic Assistance (COMECON). In this sense, improved pricing of land and capital in the USSR may be the necessary conditions for the development of a freely convertible ruble in international trade. If this is the consequence, it will mark a historic step in the development of the Soviet economy. Realistic costs of production, permitting comparisons with world-market price levels, could enable the USSR to enter the trading world freed from the nagging fear that it may be exporting the wrong products.

This can be illustrated by recent Soviet experience in the export of sunflower seed oil, of which the USSR is the world's leading exporter. The basic price of sunflower seed in the Ukraine was 165 rubles per ton in 1968, or $183 at the official rate of exchange. Assuming an extraction rate of 44 percent, the oil from a metric ton of seed was worth $71 at Rotterdam in June of 1968 (at 7.3 cents per pound).[10] This would leave $112 plus the costs of processing, transport and storage to be covered by the feed value of the approximately 1200 pounds of sunflower meal obtained from a metric ton of seed. Soviet exports of sunflower seed oil at 7.3 cents per pound, c.i.f. Rotterdam, would thus be economic only if the feeding value of the sunflower-seed meal was about three times as great as the feeding value of soybean meal in the U.S. (assuming a U.S. price of 3.5 cents per pound for meal). Alternatively, exports of sunflower-seed oil would be economically justified if the exchange rate for

10. David M. Schoonover, "Soviet Sunflowers and the World Vegetable Oil Market" (Washington: U.S. Department of Agriculture, Foreign Regional Analysis Division, Nov. 1968).

the ruble was assumed to lie in the range of 45 to 50 cents, in contrast to the official rate of $1.11. If the Soviet authorities are to determine whether or not to continue purchasing sunflower seed at $183 per ton and exporting the oil at 7.3 cents per pound, they need reliable cost data, especially on the opportunity costs of labor, capital, and land used for sunflower production. These data are not provided by the existing statistical reporting system.

One big step forward in the calculation of realistic costs of production has been taken in the method of paying collective-farm workers. Beginning gradually in 1966–67 and accelerating in 1968, collective farms shifted to a monthly wage for their farm workers. In the past, and still today on some farms, the collective-farm worker has been credited with workdays for each job performed, according to a graduated scale. An 8-hour day in one job might be worth 0.6 workday units, while the same hours in a highly skilled job might be credited as 3.0 workdays. The accumulated sum of workday units at the end of the year determined the worker's share in total farm income.

The shift to a monthly money wage, plus a possible bonus if the farm has had a profitable year, has removed the biggest barrier to meaningful cost comparisons between state farms and collective farms. State-farm workers have always been paid on a cash wage basis, but the uncertain money value of the workday unit on the collective farms made it difficult to compare labor costs of production on state and collective farms. This difficulty is being removed. One consequence is to throw a sharper light on the high labor costs of production. This is leading planning authorities, economic research workers, and farm managers to focus attention on comparative labor productivity. And it is contributing to a convergence of management norms on state farms and collective farms.

This convergence was accelerated by a shift after 1966 to a requirement that state farms finance operating capital investments out of earnings. In the past, state farms received investment capital allocations from the state authorities. The political procedures followed were reminiscent of the methods by which a rural town in the United States might acquire a new post office. This contributed to a certain carelessness on the part of state-farm managers in computing estimates of the marginal productivity of new capital investments.

Under the new principle of self-financing (the *khozraschet* principle), state farms are no longer "on the budget." Irrigation projects, drainage, and certain large buildings and farm improvements will still be financed by the state, as will expenditures on social overhead capital. But in general, state farms are now required to finance investments from earnings. This is leading toward convergence in accounting practices and operational

procedures among state and collective farms and is revealing the high capital costs of production on some state farms. Over time it may contribute to a more realistic assessment of the relative efficiency of resource use. One consequence may be to dampen official enthusiasm for state farms, whose high costs of production have often been disguised in the past.

Some Policy Consequences of Accounting Practices and Data Reporting Systems

The decision-making framework for macro and micro agricultural management can be summarized in the following manner:

(1) At the national policy level, a political welfare function is being maximized in which two goals dominate:
   (a) To insure a food and fiber supply for urban and industrial areas;
   (b) To provide an export surplus of selected products to satisfy commitments to trading partners and to earn badly needed hard-currency foreign exchange.
(2) At the planning level, a utility function is being maximized in which the utility of successes may be intangible and small (honors, prestige), while the disutility of failures may be painfully tangible and great (transfer, demotion, loss of job).
(3) At the farm level, a modified profit function is being maximized, subject to two principal constraints:
   (a) An administrative control on global labor income;
   (b) An investment policy that calls for internal self-financing of capital improvements (the *khozraschet* principle).
(4) Through 1968, there was no charge for the use of land.
(5) Production credit is heavily subsidized, with the typical rate of interest set at 2 percent.
(6) Product and factor prices are administratively fixed and change at irregular intervals. In 1965, farmers were promised stable prices and unchanged delivery quotas for five years.
(7) Product price levels are designed to cover average costs of production, by zones.
(8) Forward supply contracts are negotiated between procurement agencies and state and collective farms, typically specifying guaranteed minimum delivery quantities, with sometimes handsome bonuses for above-contract quantities or qualities. Base prices are not negotiable; premiums may be. For some products,

minimum sown areas or planting quotas are specified, e.g. wheat. For others, maximum permissible sown areas are set, e.g. sunflowers.[11]

The resulting matrix in which planning and management decisions are made is heavily biased toward caution and conservativism. Decision making is fragmented, and decision makers at the different levels are optimizing different functions. One consequence has been to penalize specialization in agricultural production.

In a capitalist agricultural economy, the lure of profits may lead decision makers to overassess the probability of gains and underassess the probability of losses. Coupled with this is the expectation that profits can be largely retained, while serious losses may be passed on in part to others, especially if the firm operates with borrowed funds or shareholder equities.

In the Soviet farm economy, an opposite set of expectations prevails. Decision makers at the firm or industry level seem likely to underassess the probability of profits and overassess the probability of losses. This is associated with the expectation that profits will have to be shared with other (especially the state procurement agencies), while any losses will have to be borne wholly by the decision makers.

This suggests the following hypotheses:

(1) The capitalist decision maker's expectations of profit and loss are non-symmetrical and are skewed to the profit side. This encourages specialization.
(2) The socialist decision maker's (planner's, firm manager's) profit and loss expectations are also non-symmetrical and are skewed to the loss side. This discourages specialization.

In the Soviet economy, the high cost of failure reenforces the traditional peasant preference for a diversified mix of production, in order to reduce risk. This has led to a repetition, especially at the collective-farm level, of the "universal peasant household" as the model for production organization. A preference for risk insurance through diversification extends throughout the system and is especially pronounced at top levels of command. This generation of Soviet agricultural officials is terribly afraid of running out of bread. This is perhaps the major reason why agricultural specialization has lagged in the USSR.

A preference structure with heavy emphasis on risk avoidance has thus remained relatively intact in the transition from peasant or pre-socialist agriculture to socialist agriculture. This was rendered more or less inevi-

11. One farm manager observed in August 1968: "Sunflowers at present prices are so profitable I would put every hectare in sunflowers if I could."

table by the probability that in a planned economy the marginal utility of a given measure of success is less than the marginal disutility of a similar measure of failure.[12]

Given this situation, the promotion of functional specialization requires that the costs of failure be lowered or the benefits of success raised or both. This the Soviets have begun to do. The emphasis on rigid delivery quotas has been reduced, and farm-product prices have been raised. As a consequence, collective and state farms are shifting away from the "universal peasant household" model.

The shift is uneven, and the rewards offered in the form of higher product prices or cheap credit have been great. It seems probable that this strong preference for risk avoidance is one of the explanations for the disproportionately high prices for livestock and poultry products, and the slow response of output.

A more direct explanation is provided by the treatment of capital in Soviet value theory and accounting practices. In theory, capital stocks other than land represent "embodied labor" or past labor. The labor invested in the production of capital goods gives them value, and the amount of labor invested determines relative values. If a mistake is made, the wrong investments may have little net productive value to the economy; but accounting methods and the economic theory on which they rest prevent any writing off of this capital.

If market preferences shift, consumer tastes change, or new technology renders old capital stocks obsolete, it is difficult in the Soviet system to depreciate capital on any grounds other than physical wear and tear. This yields a structure that is consistently "overcapitalized," in terms of capital values based on true rates of marginal productivity.

The consequences for agricultural price policy are significant. As noted above, prices are set by central government authorities to cover costs of production, graduated by geographic zones. The costs considered are average costs rather than marginal costs. In general, the lowest prices for a product will be in areas most favored by climate and soils or closest to markets. The higher prices will be found in areas remote from market or only marginally suited to production of the product in terms of soil and weather, since costs in those areas are high.

If building costs are included in costs of production, but land costs excluded, the effect is to overstate costs of production for animal products relative to field-crop products. For products for which building costs may

12. For a discussion of the consequences in socialist economies outside the Soviet Union, see Jerzy F. Karcz, "Certain Aspects of New Economic Systems in Bulgaria and Czechoslovakia," in *Agrarian Policies and Problems in Communist and Non-Communist Countries*, ed. W. A. Douglas Jackson.

be an important part of total costs, e.g. milk, pork, or poultry, the consequence of heavy investments in poorly designed or inefficient buildings is to inflate costs of production, and these costs are then built into product price levels.

The labor theory of value and accounting practices that derive from it insure that, once made, a mistaken investment must be paid for. This appears to be a significant part of the explanation for relative animal-product prices in the USSR that seem out of line with crop-product prices, by West European or North American standards.

One pervasive characteristic of Soviet agricultural policy has been the impatience with which central planning officials have dealt with farm problems. We have noted the tendency for decision makers in a command economy to put low values on probabilities of success and high values on probabilities of failure. This tendency seems to be reversed for agriculture at the very highest levels of command. The first transitory successes of the virgin-lands program in the 1950's led to a euphoric belief that the food problem was solved. In the preparation of the Seven Year Plan for 1959–65 the Soviets exhibited the same tendency to turn away from agriculture and cut back on investment that had characterized the Second Five Year Plan in India for 1955–59. Soviet agriculture stagnated after 1958 during the last years under Khrushchev, as it had in 1948–52 during the last years under Stalin.[13]

Mismanagement of the dissolution of the MTS after 1958, erratic interference by Khrushchev in details of farm planning, and subsequent bad weather in 1963 forced the USSR into the ranks of net importers of bread grain. The shock of this experience led to a renewed attention to agriculture, to the price reforms of 1965, and to the management reforms of 1966 described above. These reforms in agricultural policy and management goals in the 1960's provide an incentive structure that is better suited to the exploitation of modern technology than any before in the history of the Soviet Union. But it is still not clear that top policy-makers have accepted the primacy of agriculture in development planning. And it is clear that deficient statistics are a major barrier to the further evolution of Soviet agriculture.[14]

13. Jerzy Karcz, "Soviet Agriculture: A Balance Sheet," *Studies on the Soviet Union* 6, no. 4 (1967): 134–37; Nancy Nimitz, "Agriculture Under Khrushchev: The Lean Years," Paper No. P-3073, (Santa Monica: The Rand Corporation, March 1965).

14. An earlier version of this chapter was prepared for the symposium on "Farm Policy Goals and Research Needs," North Central Regional Farm Policy Research Committee, NCR-56, Chicago, 10–11 March 1969.

12

Karl-Eugen Wädekin

Soviet Agricultural Statistics: Summary and Assessment

A user of Soviet agricultural statistics is immediately confronted with two problems: that of the reliability of the available data and of the gaps in them, and that of the reticence of Soviet statistical agencies and their reluctance to make better and more complete data available to their own public. These problems are still typical, even though considerable improvement has occurred during the last decade or so. There is more than one cause for this state of affairs, but prominent among the causes is the urge to conceal the weak sides of the economic and social system; another cause lies in the ideological peculiarities of Soviet economic thought. Both causes are clearly discernible when we approach agricultural statistics, perhaps to an even greater extent than in other Soviet statistics. It is true that Soviet agricultural performance has improved of late, but it has not yet improved enough to justify the claims of Soviet economic theory or to reduce the desire to withhold certain data from publication. On the other hand, the persisting problems of Soviet agriculture have made it urgent and vital to provide data which can help both planners and farm managers to evaluate their situation and find means for improvement. At this stage, the hard facts of economics have barely begun to prevail against the strictures of an ideologically based theory and over political expediency.

The shortcomings of the published statistics are particularly apparent when we deal with socioeconomic phenomena in Soviet agriculture. The crucial importance of better and more abundant information in this field is increasingly being acknowledged, but many important data are still lacking. These facets of Soviet rural life are more exposed to ideological strictures on collection, publication, and discussion of the data than other aspects of agriculture. Thus, strangely enough, we find that a country allegedly governed by Marxist principles does not possess a statistical methodology or a data-collecting system which would be useful for the analysis of its own society. Here, too, there has been some improvement of late, and many social groups—though not classes other than workers and peasants—may be analyzed by Soviet scholars. Official

statistics, however, have not yet adapted themselves to the new developments. Analysts must accordingly rely on a few indirect indicators, mainly those that touch on occupation and education, though there has been some recent progress in the provision of data on personal incomes.

The role played by the nonagricultural rural population in Soviet farming and in Soviet life in general is one socioeconomic subject that has long escaped the attention of Soviet scholars as well as of Western scholars. Only a few recent Soviet publications indicate that the importance of this problem is now being realized. But apart from some crude information in the 1959 census volumes (which will hopefully be expanded in the forthcoming volumes dealing with the 1970 census), there are no comprehensive data which allow us to assess the impact of rural residents in nonagricultural occupations on Soviet farming in general. We are no better off with respect to data on the nonagricultural labor force in the huge kolkhozy and sovkhozy, even though efforts to modernize these enterprise-communities must rely more and more on this kind of labor. It will no longer do to publish the data on the numbers of "mechanizers" alone. Very little information is available on the number of people employed in the trade and distribution network who handle agricultural products and supply industrial goods to agriculture and the rural population.

Management is another major field where Soviet agricultural statistics are of limited use to the analyst. Only one significant example can be added to Professor Raup's illuminating treatment: according to the Soviet newspaper *Trud* (28 June 1970), a calculation using the methodology recommended by the All-Union Institute of Agricultural Economics yields a price per hectare for good chernozem land in the Kuznetsk Basin equal to the retail price of two pairs of fashionable ladies' shoes. It is well known that the prices of such shoes are exorbitant in Moscow and fashionable shoes may well be unavailable in Kuznetsk; but we must still wonder about the rationality of choices made by planners or managers on the basis of such relative prices.

Another major deficiency area is that of income statistics, which are dealt with in Chapters 4 to 6 of this volume. These data are particularly inadequate for the agricultural population. Various Soviet writers, e.g., M. I. Sidorova, have recently pointed out that the current sample surveys tend to overstate the size of average family income. Moreover, there are no exact or comprehensive data on the size of total rural family incomes, and one is entitled to assume that this information is not available to Soviet scholars either. In addition, the very nature of semilegal or outright illegal private incomes must result in sizable concealment. There are some indications that the importance of this kind of income in

the villages is not negligible, but we cannot at present say more on this important subject.

By now the information gap has narrowed with respect to total incomes from private plots and private animal husbandry. But such information as is available refers to very large aggregates; no detailed breakdown is available for such categories (still largely aggregated) as incomes of urban or rural residents, or incomes of kolkhoz peasants and of other Soviet citizens from private farm production. The disappointing results of production in the private sector since 1966 may have been affected by rural outmigration, by changes in the age and sex structure, and by the growing importance of private production by the nonagricultural population (which markets less output than does the kolkhoz peasantry in relation to total output). In the absence of more detailed information we can only guess at the relative importance of these factors. But it is not unreasonable to assume that such guessing also takes place in the Gosplan and other Soviet agencies, and that the failure to collect adequate statistics on these subjects deprives the top Soviet decision makers of the kind of information that is required for very important policy decisions.

The list of such gaps and deficiencies could be extended; as Dr. Schinke indicates, statistics on the labor force and on productivity would rank prominently on the extended list. Of course, agricultural statistics in other countries leave much to be desired. But the special nature of the deficiencies discussed here throws light on peculiarities of Soviet agricultural policy. Technical and organizational aspects, as well as problems of natural resources, receive due attention in the formulation of this policy; at times, perhaps, this attention is really excessive. But the economic and human-relations aspects have been neglected for a long time, and they are not sufficiently taken into account even today. We should not wonder that these are indeed the critical factors in the performance of Soviet agriculture. Their importance there only confirms what we have known for a long time on the basis of other evidence. But the relationship between the kind of statistics that are available and the importance of these factors provides strong evidence for the view that the Soviet leadership not only neglected these factors (and not just temporarily) during the so-called period of transition to communism but was also unaware of the long-run results of this neglect. They now find it difficult to collect the information necessary for a more sophisticated approach to the management of agrarian affairs.

Having said this much, we must immediately consider the following question: What use can be made of Soviet agricultural statistics by Western observers? Though individuals may differ in the assessment of the relative importance of various factors, it is fair to say that we now

have a reasonably reliable picture of the overall achievements and of the shortcomings of Soviet agriculture. Soviet statistics are no longer taken at their face value: various adjustments and cross checks of the data—as well as the careful reading of the supplied definitions—have long yielded reasonably accurate results. The late Naum Jasny's adjustments of the Soviet data on grain output in the thirties and forties are known to everyone in the profession as an outstanding example of this kind of procedure. The flow of official Soviet statistics is greater today, and there is also more quantitative information supplied by other Soviet sources and a wealth of accumulated Western research, based on these Soviet data.

But two major fields of inquiry are still to be explored. One of these contains aspects that are not covered adequately in the available Soviet data. The tendency to concentrate our research on problems of the kind that can be elucidated with the aid of the available information is, of course, understandable. But we risk being trapped in this approach just as much as our Soviet counterparts are trapped by the deficiencies and the loopholes in the available data. On the whole, these data tend to overstate achievements and to underplay the weaknesses of Soviet agriculture. In 1965–66, when the Eighth Five Year Plan was being constructed, there was hardly a basis for reasonable projections of labor productivity trends, of income elasticity of demand (especially for food, but for other products and services as well), and of trends in the mobility of labor between sectors of the economy and regions of the country. Under the circumstances, one could only guess about what impact the economic reforms that were initiated would have on productive efficiency. In most cases, the indicators available in official Soviet statistics were useless for adequate assessment of these factors, while other relevant data were extremely scarce. What followed in Soviet agriculture after 1966, however, was profoundly affected by the impact of these underexplored and underresearched issues. Although agricultural production increased faster than the population did, the demand for food still outstripped the supply and created the situation that was discussed critically at the December 1969 and the July 1970 sessions of the Central Committee. In the economy as a whole, the increase in average wages surpassed the planned target by not too wide a margin (the increase in the average income of the kolkhozniki only slightly exceeded the planned target, but average state-farm wages exceeded it considerably). But it was labor productivity that lagged behind the planned goals in agriculture as well as in industry: this lag kept labor costs per unit of output high and helped to perpetuate existing inflationary pressures. It is true that the armament drive, the Sino-Soviet tensions, and the Vietnam war placed

additional (though not entirely unpredictable) pressures on the available capital resources. But I doubt whether this was the only cause of the failure to meet investment targets in agriculture.

A second field to be explored covers data on demographic changes after 1959; these data and those on migration were extremely scarce in 1965. No one would have dared to predict that significant outflow of labor from agriculture would continue in spite of Soviet assertions to the contrary during the initial phases of the Eighth Five Year Plan. But this is exactly what happened. The ranks of the young and the skilled agricultural workers are being thinned still further, in part because the demand for labor in industry is greater than planned. As a result, agriculture has lost the very individuals who were urgently needed in farming to make a more efficient use of the increased capital inputs and thus to assure the fulfillment of planned targets.

All this only illustrates the point that Western observers should concentrate more on the few available data that describe some of these neglected aspects. But I would also like to register a second plea to the effect that more attention be paid to regional analysis. In a country as large and as varied geographically as the USSR, the national figures or averages tell less than half the story. Fortunately, regional analysis is increasingly recommended in Western research on the Soviet economy. But this approach is still in its infancy in Western research on Soviet agriculture. It is true that regional data are not as readily available as national data, and that it is virtually impossible to adjust them to the same degree as national data. But the regional approach can stand a wider margin of error and still provide useful additional insights. The validity of this statement can best be demonstrated by examining the proposition that Soviet agriculture still provides employment for too large a fraction of the total labor force. This proposition must, of course, immediately be qualified by reference to available capital, climatic conditions, and skills of the available agricultural labor. But in addition, any discussion is virtually meaningless until we begin to differentiate among the regions. A labor surplus in the South and the Southeast of the country does not really compensate for the existing shortage of labor in Central Russia and in Siberia. In this instance, regional analysis—even if based on less adequate data—brings us closer to the heart of the problem.

Of course, one shudders at the thought of the amount of work involved in the proposal just advocated. While computers may ultimately be of some help at a later stage of this work, they will be of little use in the basic task of collecting regional data as well as hitherto neglected data and at the same time evaluating their accuracy and relevance. As is always true, the right kind of question must also be asked while the data are

being collected. It is in this context that this volume, and in particular Chapters 10 and 11, will offer valuable assistance to the future researcher. Even though the task still seems overwhelming, it also offers the exciting prospects of scientific discovery and of greater understanding of Soviet reality. The alternative, of course, is to persevere on a path that has been rewarding in the past, but which is becoming less and less so as we move into the future.

V

Real Income and Consumption Statistics

13

Gertrude E. Schroeder

An Appraisal of Soviet Wage and Income Statistics

From 1937 until 1965 the USSR was unique among industrialized countries in that its current official statistical publications contained not a single figure in the country's own currency about the wages of its work force. Although some wage data in rubles are now published annually, the USSR is still unique in the paucity of these data and in the meager information that is provided on how they are obtained. This is particularly true with respect to the published indexes that purport to measure changes in real incomes, taking account both of changes in money and in-kind earnings and changes in prices. In 1968 the USSR finally published a separate volume of statistics on labor,[1] the first such compendium in over thirty years. This slender volume contains some three hundred pages of statistics relating to various aspects of the work force and some six pages of explanatory text. Of these pages, twelve contain absolute data on money wages and indexes of changes in "real incomes," and two brief paragraphs are allotted to explaining what the statistics are designed to measure. The latest annual general statistical compendium (1968) includes only three short tables on money wages and one table on the growth of real income.[2] Why this relative statistical silence on the part of a government that has long proclaimed among its major purposes the abolition of inequality and the attainment of a high level of material welfare for its people at a faster rate than could be achieved under any other system? One can only speculate.

The pittance of data on real and money wages that the USSR chooses to make available contrasts sharply with the practice in other industrialized countries. The U.S., for example, publishes monthly data on average hourly and weekly earnings for some 365 sectoral categories and over 175 regional breakdowns. In addition, statistics on average annual full-time earnings are published annually, wage data of various kinds are

1. TsSU, *Trud v SSSR* (Moscow, 1968).
2. TsSU, *Narodnoe khoziaistvo SSSR v 1968 godu*, i.e., *Narkhoz 68* (Moscow, 1969), pp. 554–56, 572.

available periodically by age, sex, and race, and numerous special studies are published on wages in individual occupations, sectors, and regions and on earnings of various groups of workers. Also, the U.S. publishes a monthly cost-of-living index and makes available a detailed explanation of its construction. From this wealth of data one can compute indexes of real wages in any detail desired. While the U.S. grinds out such statistics more furiously than do other industrial countries, they, too, typically provide a large amount of wage and price data, and even more important, explanations of how the various statistics and indexes are obtained. Even the Communist countries of East Europe have been far more generous with wage data and explanations of them than has the USSR; most of these countries have published statistics on money earnings from the inception of publication of their annual statistical compendia.

The USSR's relative niggardliness with information about money wage levels and trends also contrasts sharply with its own practice during the late 1920's and early 1930's, when the volume of published statistics compared favorably with that of other countries and included, among other things, absolute data on earnings by occupation and frequency distributions of earnings in a variety of breakdowns. Neither of these types of information has been made available in the postwar period; moreover the data on average earnings recently published are not provided in nearly so detailed a sectoral breakdown as was provided in the prewar period. Before 1937, wage and related employment data were even published monthly for some years, as is done in the U.S. and many other countries.

Indeed, the USSR has a far better opportunity to release much more complete and comprehensive wage and price data than most Western countries. In the latter the desired statistical data are collected by means of sampling, whereas the USSR collects the data from all business establishments as part of the process of required reporting on fulfillment of plans and on registration of state-fixed prices. Not only are the primary data collected, but they are processed by the Central Statistical Administration (TsSU) into numerous detailed reports. Thus the annual work plan of TsSU (the latest available is for 1965) calls for the compilation of quarterly reports on the number of wage and salary workers and the wage fund by detailed sectoral, ministerial, and geographic breakdown.[3] Quarterly and annual reports are also prepared on the results of the monthly sample surveys of the income and expenditure budgets of families of wage and salary workers and collective farmers. Unfortu-

3. *Plan statisticheskikh rabot Tsentral'nogo statisticheskogo upravlenia pri Sovete Ministrov SSSR na 1965 god* (Moscow, 1965), pp. 172–91.

nately, the vast bulk of this wealth of compiled data is carefully kept secret.

Statistics on Money Wages in Nonagricultural Sectors

Availability. In the period between 1937 and 1965 Western scholars had to go to heroic lengths to learn anything about wage levels, differentials, and trends in the world's second-largest industrial country. Even such a simple aggregate as the average wage in rubles of the state labor force was not published officially during this period. Only a few references to percentage changes in average wages over various periods appeared in scattered sources, mostly nonofficial.[4] After the USSR launched a general wage reform in 1956, Soviet scholars began to publish articles and books on wages, a subject almost completely neglected until then.[5] But again until 1965, if one wanted to learn something about, say, average wages and wage differentials in industry, one had to assemble bits and pieces of data from official and unofficial Soviet sources on percentage changes over different periods and on percentage figures relating average wages in various branches of industry to wages, for example, in the coal industry. To convert all these assorted and oftentimes inconsistent percentages to rubles, one had to rely on such slender reeds as an occasional absolute figure for some year or on the dimly understood ruble wage figure in the 1941 plan. Western scholars persisted, nevertheless; but when compared with the data at last published, such rough-hewn estimates turned out to be somewhat in error.[6]

Then in 1956 the USSR began publishing general annual statistical handbooks and a few compendia on individual sectors of the economy, but until the publication of *Narodnoe khoziaistvo SSSR v 1964 godu* (*Narkhoz 64*) these publications contained figures only on percentage changes in real wages or incomes. Because the pertinent cost-of-living index was not published, trends in money wages could not be derived precisely from these figures. The first official data on money wages in rubles in the postwar period were published in the 1964 handbook and

4. For a survey of what figures on money and real wages were available through 1958 see Janet G. Chapman, *Real Wages in Soviet Russia Since 1928* (Cambridge: Harvard Univ. Press, 1963), pp. 181–84.

5. See for example, A. G. Aganbegian and V. F. Maier, *Zarabotnaia plata v SSSR* (Moscow, 1959); S. P. Figurnov, *Real'naia zarabotnaia plata i pod"em material'nogo blagosostoianiia trudiashchikhsia v SSSR* (Moscow, 1960); D. N. Karpukhin, *Sootnoshenie rosta proizvoditel'nosti truda i zarabotnoi platy* (Moscow, 1963); V. F. Maier, *Zarabotnaia plata v period perekhoda k kommunizmu* (Moscow, 1963); R. A. Batkaev and V. I. Markov, *Differentsiatsiia zarabotnoi platy v promyshlennosti SSSR* (Moscow, 1964).

6. See, for example, the author's attempt to estimate industrial wage differentials. Gertrude E. Schroeder, "Industrial Wage Differentials in the USSR," *Soviet Studies* 17, no. 3 (Jan. 1966), pp. 303–16.

included average monthly money wages for all wage and salary workers for the years 1940, 1946, 1950, 1955, 1958–64 and for twelve major branches of the economy for the years 1958, 1960, 1963, and 1964.[7] The 1965 handbook repeated these data and added data for 1965,[8] and the fiftieth-anniversary volume *Strana Sovetov za 50 let* added some data for the years 1940, 1945, and 1966.[9] The 1967 handbook added data for 1950 and 1967.[10] Then came the long-awaited, frequently promised special handbook *Trud v SSSR*. This compendium included statistics by sector of the economy for a few additional years and added new tables giving average monthly wages in industry and construction by class of worker and average monthly wages by branch of industry (20 including subbranches) for 1950, 1955, and 1960–66.[11]

While one can only rejoice at the appearance of these new data on money wages in rubles, their sum total is little indeed, and the gaps are many and significant. First, data on average monthly earnings are provided for only twelve major sectors of the economy, three subbranches of transportation, and eleven main branches plus nine subbranches of industry.[12] In the industrial breakdown there is no nonferrous metals industry and no petroleum industry; only a single average figure is provided for the machinery industries, which employ over one-third of the total industrial labor force. There are still no national data on trends and levels of earnings by occupation, nor are frequency distributions of workers by wages available for any category. Changes in relative wages by level of skills can be discerned only dimly. Official data are published giving wages for only three class-of-worker breakdowns—production workers (*rabochie*), engineering-technical workers (*inzhenerno-tekhnicheskie rabotniki*) and white-collar employees (*sluzhashchie*). And such data are provided only for industry (by branch), for construction, and for state agriculture. Individual Soviet writers have cited such a breakdown for the economy as a whole in the form of index numbers showing relative changes over time, but none has been given for any year since 1960.[13] In any case, the category-of-worker breakdown is a very gross one; thus,

7. *Narkhoz 64*, pp. 554–56.
8. *Narkhoz 65*, pp. 556–68.
9. TsSU, *Strana sovetov za 50 let* (Moscow, 1967), pp. 226–27.
10. *Narkhoz 67*, pp. 656–58.
11. TsSU, *Trud v SSSR* (Moscow, 1968), pp. 136–45.
12. A small amount of additional official data has been provided to the ILO: for example, average wages are given for nine branches of industry not elsewhere published. They are beverages, tobacco, furniture, leather, fur, rubber products, nonmetallic mineral products, basic metal industries, and electrical machinery. International Labour Office, *Year Book of Labour Statistics 1968*, p. 598.
13. Aganbegian and Maier, p. 202.

production workers make up 82 percent of the total employment in the industrial sector.

To obtain any knowledge of regional differentials in earnings one must resort to the annual statistical handbooks for individual republics, not all of which have published such handbooks; nor are data on wages always included. Individual Soviet writers discuss regional differentials, but the data they provide are in the familiar form of percentages relating one or another region to a republic as a whole or one part to the "center," and the like.[14] Occasionally a bit of data for a missing sector will be given by a Soviet writer. For example, a Soviet trade-union publication cites without explanation an average wage figure for nonferrous metallurgy, presumably for 1966, and average wages for several occupations.[15] But one cannot be sure of the quality of such figures: i.e., are they official or the author's estimates, and if the latter, how were they made? Also, as was the case before 1965, such data occasionally provided by individual Soviet writers are quite ambiguous; frequently it is not clear to what year they refer, whether they pertain to wages of production workers only or to all employees, or even whether they relate to the country as a whole, to a geographic area, or to a particular factory.

Quality. The current official Soviet series of data on average monthly wages evidently represents the extension of the prewar series. The two series appear to be comparable in concept, and as far as can be determined the current series (which begins with 1940) is internally consistent and reasonably comparable throughout the period. The series is based on the regular monthly and quarterly reports on employment and payrolls that all Soviet enterprises and institutions are required to submit to TsSU. The average monthly wage is calculated as the product of the division of the "wage fund" (*fond zarabotnoi platy*) by the average number of "registered staff," (*spisochnye sostavy*). Since the adoption of the general economic reform announced in 1965 the average wage also includes bonuses paid out of the newly created "incentive fund" (*premiia iz fonda material'nogo pooshchreniia*).

The kinds of payments explicitly included in or excluded from this wage fund are set forth in official instructions of TsSU. The latest avail-

14. M. Z. Bor, ed., *Real'nye dokhody i zhiznennyi uroven' trudiashchikhsia* (Minsk, 1966), pp. 61, 62, 73. E. I. Landin, *Real'naia zarabotnaia plata i dokhody trudiashchikhsia* (Minsk, 1962), p. 58. Ts. S. Slutskina, *Territorial'nye problemy dokhodov i potrebleniia trudiashchikhsia* (Moscow, 1966), p. 63. N. P. Kalinovskii, *Raionnye razlichia real'noi zarabotnoi platy rabochikh i sluzhashchikh* (Moscow, 1966), pp. 50, 53–55, 56.

15. *Profsoiuznaia rabota na metallurgicheskikh predpriiatiiakh* (Moscow, 1967), p. 67.

able were published in 1964,[16] but have been amended by instructions issued in 1968 relating to new forms for enterprise reporting on employment and wages.[17] The wage fund includes all regular wages and salaries paid in accordance with established rates and scales, all regular bonuses paid to production workers in connection with the operation of the established wage and salary system, all supplemental wage payments (such as severance pay) provided for by law, and the money value of goods and services-in-kind required by law to be provided in some cases. With respect to enterprises operating under the rules of the 1965 economic reform the wage fund no longer includes the bonuses connected with the plan fulfillment paid to salaried employees; such bonuses (as well as some new bonuses for production workers) are accounted for under a separate fund, the "incentive fund" formed out of profits, and these bonuses are added in separately in calculating the average wage. The following kinds of money payments are not included in either the wage fund or the incentive fund: one-time bonuses paid from special funds (e.g., bonus for victory in socialist competition, bonuses for creating and introducing new technology (in industry), rewards for discoveries, inventions, and suggestions, bonuses for completing projects ahead of time; bonuses paid out of the enterprise director's fund that existed before the 1965 reform, and bonuses for saving on fuel and electricity, collecting scrap, using waste materials, and the like. Since bonuses paid from the director's fund were formerly excluded from calculations of the average wage but are now included as bonuses paid from the "incentive fund," the data for years before 1967 would need to include such bonuses in order to be comparable with the data for later years. A revised average wage series by branch of the economy has now been published for the period 1960–68; it includes "one time and other bonuses not counted in the wage fund."[18] *Narkhoz 68* uses these data, adds 1968, and gives data for different branches of the economy. Presumably the revised series adds in the bonuses paid from the director's fund and may also include some or perhaps all of the other bonuses that were formerly excluded. The evidence on this point is not explicit.

The descriptions of how the series on average monthly wages is calculated are unclear as to whether the dividend and the divisor represent precisely the same universe. The dividend is generally described as the "wage fund" (plus bonuses paid from the new incentive fund) and the divisor as the average number of "registered staff."[19] The data reported

16. Gosudarstvennyi komitet Soveta Ministrov SSSR po voprosam truda i zarabotnoi platy, *Biulleten'*, 1964, no. 3, pp. 3–8.
17. Ibid., 1969, no. 2, pp. 9–18.
18. *Narkhoz 68*, pp. 555–56.
19. *Trud v SSSR*, p. 329.

by enterprises would permit either the inclusion or the exclusion of the nonregistered staff in calculations of the average wage. One Soviet source states explicitly that the wage fund includes the wages of both groups.[20] An establishment's registered staff consists of all persons whose labor books it holds; the nonregistered staff consists mainly of persons who hold jobs in more than one firm and persons employed for 5 days or less per month on work not directly connected with the firm's basic production responsibility.[21] The size of these latter categories is not known. Clearly, holders of two jobs are not double-counted in the aggregate employment statistics, but the wages paid to them may be included in the wage fund, thus inflating the average wage.

The wage fund and the associated employment used to calculate average wages include all but a small part of the civilian nonagricultural labor force. As already noted, the latter definitely excludes the nonregistered staff, and the former may include them. The series pertains to the Soviet statistical category "workers and employees" (*rabochie i sluzhashchie*). Excluded from this category, besides collective farmers, are independent artisans, employees of the Communist Party, and domestic servants. Formerly, members of the producers' cooperatives were not included, but during the 1950's these cooperatives were gradually converted to state enterprises, the last of them in 1960. Both the official series on the number of "workers and employees" before 1960 and the series on average monthly wages have been explicitly adjusted to include the members of the abolished cooperatives.[22]

Earlier assessments of the validity of Soviet wage statistics have pointed out that two distinct wage funds exist in Soviet aggregative statistics, and reference to or citations of both of them would appear here and there in Soviet writings.[23] Apparently, the two funds differed by some 20 percent in prewar years. To the best of my knowledge not a single citation of figures for these two funds has been given for any postwar year, nor have references been made to them. But clearly the two funds still exist as accounting categories. The 1965 Work Plan of TsSU calls

20. A. S. Kudriavtsev, ed., *Ekonomika truda* (Moscow, 1967), p. 368. Another source repeats this assertion and states further that wages paid to a plant's internal transport employees are also included in the plant's wage fund, but not in the number of industrial production workers. S. A. Shchenkov, *Bukhgalterskii uchet v promyshlennosti* (Moscow, 1969), p. 366.

21. For detailed descriptions of the system of labor force reporting and a discussion of concepts see Murray Feshbach, *The Soviet Statistical System: Labor Force Recordkeeping and Reporting,* International Population Series, P-90, no. 12 (Washington, 1960); and id., *The Soviet Statistical System: Labor Force Recordkeeping and Reporting Since 1957,* International Population Series, P-90, no. 17 (Washington, 1962).

22. *Narkhoz 64,* p. 555; *Trud v SSSR,* p. 328.

23. Abram Bergson, "A Problem in Soviet Statistics," *Review of Economic Statistics* 29, no. 4 (Nov. 1947), pp. 234–42.

for the preparation of quarterly and annual reports on the "comprehensive (*polnyi*) wage fund for the national economy of the USSR." In contrast to other reports on labor matters, these special reports are prepared jointly by the section for labor and wages and the section for finance in TsSU, and not directly from enterprise reports but from reports of "ministries, departments, and state administrations." The content of the special reports on the wage fund is not explained. Presumably, they pertain to the so-called "comprehensive wage fund," which Soviet statisticians would need to calculate for use by planners in preparing the overall balances of income and expenditures of the population. This fund probably would include the wages of all civilian employees not counted as "workers and employees," wages paid to prison labor, wages paid to the armed forces, including the militarized security forces, and wagelike money payments (bonuses from funds other than the wage and incentive funds) paid to all categories of employees, wages paid to students undergoing practical training in enterprises and institutions, wages paid to state wage and salary workers by collective farms, and wages paid to collective farmers by state enterprises. These were the tentative conclusions of previous researchers, based on various sources, as cited by Janet Chapman.[24] I have found no new evidence that would alter these judgments.

While I am inclined to give a generally clean bill of health to the Soviet official series on money wages that has been published since 1965, some notes of caution must nevertheless be introduced. The data are compiled from extremely detailed and complicated reports made by over 200,000 separate entities. Employment and wage reporting is as much subject to deliberate falsification as is production reporting and also to error and diversity of interpretation as a result of the great complexity of the rules and regulations in the labor field. In the case of wages, however, the distortions may be less than for output. Expenditure of the wage fund is closely supervised by the banks and financial organs, because total wages are a key part of the overall financial balances. Moreover, an enterprise is subject to conflicting incentives with respect to wage and employment reporting, and the result may be simply to cancel the biases. While the Soviet press cites instances of "erroneous" reporting of wages and employment, in the aggregate the distortion is probably not large and probably does not differ much over time.

The consistency of the published series on average wages, of course, would be affected by changes in definition of the employment series and changes in the kinds of payments that are included in the wage fund. The major change in the employment series in the postwar period has been

24. Chapman, pp. 110–13.

the treatment of producer cooperatives and certain reclassifications of agricultural workers (see below). As already mentioned, the series has been adjusted to take care of the former, and perhaps also of the latter, whose size in any case is not large.

According to a Soviet source the definition of the wage fund was broadened by revised instructions issued by the State Committee on Labor and Wages in February 1964.[25] The new instructions spell out the items to be included and excluded from the wage fund in much more detail than the earlier instruction that was issued in 1949.[26] Because of the generality of language of the 1949 instruction, however, a clear idea of the nature of the broadening of definition cannot be obtained from a comparison of the two instructions. Considerable confusion evidently had existed previously as to whether or not a given kind of bonus or other payment should or should not be counted as wages, and the revised instruction was intended to make matters explicit. It also appears that the wage statistics have treated students doing practice work in enterprises in different ways at different times. For a part of the period up to 1966 the wages paid to such trainees were included in the wage fund, but the trainees were not counted as employees.[27] The present practice is to exclude the wages paid to all youths under seventeen (except graduates of trade schools) in calculating the average wage and also not to count them as employees.[28] Finally, as noted above, the wages of nonregistered staff may be included in the wage fund, even though the employment divisor for the average wage explicitly excludes them.

The Social Wage. As was the case with money wages, the USSR until the appearance of the 1964 handbook did not publish ruble figures on what may be termed the "social wage" Soviet concept, i.e., money wages plus welfare benefits and other payments from "social consumption funds." The successive annual handbooks published during 1958–63 merely give the total amount of these extra payments to the population as a whole. In the 1964 handbook absolute figures on an average monthly "social wage" were published for the first time, and the series has been continued in subsequent handbooks. These figures pertain to the average monthly money wage of all wage and salary workers, and also of production workers in industry, plus the average monthly payments and benefits

25. *Vestnik statistiki*, 1964, no. 8, pp. 35–43.

26. V. A. Goloshchapov, compiler, *Spravochnik po bukhgalterskomu uchetu* (Moscow, 1961), pp. 189–93.

27. The 1964 instructions on the wage fund explicitly state that the wages paid to students in grades 9–11 doing practice work in enterprises are to be included in the wage fund. *Vestnik statistiki*, 1964, no. 8, p. 36.

28. S. Kh. Gurianov, I. A. Poliakov, and K. S. Remizov, *Spravochnik ekonomista po trudu* (Moscow, 1968), p. 172.

paid from social consumption funds. The Russian terminology is *sredniaia zarabotnaia plata rabochikh i sluzhashchikh s dobavleniem vyplat i l'got poluchaemykh iz obshchestvennykh fondov potrebleniia.* The addition includes the expenditures made by the state, collective farms, trade unions and other social organizations for the following purposes: pensions, sick and disability benefits, aid to mothers with many children and those without spouses, student stipends, training, medical care, passes to rest homes and sanatoria, and costs of maintenance of state housing not covered by rent payments. Also included are payments for leave, one-time bonuses, and other unspecified kinds of expenditures.[29] In determining the total of these payments and benefits, expenditures on health, education, and other cultural measures exclude expenditures for investment, science, the press, and art; expenditures on passes to resorts exclude fees paid by the people; bonuses and payments for leave are net of taxes.

Data on the average "social wage" per wage and salary worker are available for 1940, 1946, 1950, 1955–68; with respect to production workers in industry they are available for 1964–68. The total sum of "payments and benefits" to the population as a whole has been published regularly beginning with the first postwar handbook in 1956. The definition was broadened in 1963 to add housing subsidies and social welfare expenditures made by collective farms and trade unions, and perhaps other expenditures; the entire series was revised accordingly.[30] The share of payments and benefits in the total "social" wage has risen from 19 percent in 1940 to 25 percent in 1968; "payments and benefits" are in current prices. How the total of these payments is allocated between wage and salary workers and other groups in the population is not explained, but the general method is probably the same as that used in connection with calculations of real income of the various groups. See below.

Other Data. For some purposes a measure of average hourly earnings, rather than average monthly or annual earnings, is useful. Such a measure can be calculated for the postwar period from various pieces of data, and the results undoubtedly would not be much in error. Nevertheless, the data on hours of work that are now published in the various handbooks are far from satisfactory. First of all, they relate to the average length of the established workweek, not to hours actually worked, and therefore do not reflect the influence of overtime work and absenteeism. Second, the data refer only to production workers eighteen years old and older in industry and are available only for 1913, 1955, and succeeding years.

29. *Narkhoz 63*, pp. 708–9.
30. Ibid.

The 1967 handbook contains percentage distributions of adult wage and salary workers by length of the established workweek as of 3 January 1968 for the main sectors of the economy and branches of industry.[31] Finally, the data published on the number of days worked during a year are also restricted to production workers in industry and are available for only a few years;[32] such data are also available for seven branches of industry in 1963.[33]

For purposes of calculating real wages it is desirable to obtain a measure of net money wages, i.e., gross money wages minus direct taxes and also minus purchases of government bonds at least through 1957; since the suspension of virtually compulsory bond purchases in that year, the annual purchases have been very small and probably should be regarded as voluntary savings. Data from a variety of sources permit an estimate of total direct taxes and bond purchases;[34] the part of the total that pertains to the state labor force alone cannot be calculated accurately from available information, however.

Besides the data pertaining to average money earnings and the "social wage," assorted data are available from official and unofficial sources that can be used to study the nature of the Soviet wage and salary system. Percentage distributions of three kinds of data are published from time to time in the periodic statistical handbooks: (1) composition of the wage fund in industry and in construction by class of worker and type of wage payment (basic wages, bonuses, payment for leave, etc.); (2) basic systems of wage payment (piece or time rates) for production workers in industry by branch and also in construction; and (3) labor grades of production workers also in industry by branch and in construction. Data on composition of the wage fund are provided for most years and are obtained as a part of the same reporting system that yields the data on average wages. The distributions of workers by system of wages and by labor grades are obtained from special surveys, the latest of which was made as of 2 August 1965. The results of such surveys often are published first in *Vestnik statistiki*, the journal of TsSU, and later republished in one or another of the periodic handbooks.

Finally, bits and pieces of data on wages appear in books and articles by Soviet scholars. Their variety is too great to describe in detail, and their quality is uncertain. The usual sources are specialized monographs on individual branches of industry and of the economy and more general

31. *Narkhoz 67*, pp. 663–64.
32. TsSU, *Promyshlennost' SSSR* (Moscow, 1964), p. 87.
33. *Vestnik statistiki*, 1964, no. 8, p. 87.
34. See David W. Bronson and Barbara S. Severin, "Recent Trends in Consumption and Disposable Money Income in the USSR," in U.S., Congress, Joint Economic Committee, *New Directions in the Soviet Economy* (Washington, 1966), pp. 526, 528.

studies of various aspects of the functioning of the wage and salary system. A spate of studies of both kinds appeared during 1959–62, when the wage reform was being implemented; far fewer have been published since then. For the most part, the statistics in such sources generally pertain either to particular regions or only to particular plants and groups of plants. Finally, considerable data have been published in the past several years showing how the economic reform is affecting wages overall, in all transferred enterprises, and in individual ones.

Statistics on Money "Wages" in Agriculture

With the rapid monetization of farmers' incomes that has occurred in the USSR since 1953, and the introduction of the guaranteed monthly wage in the past several years, the money earnings of collective farmers have increasingly taken on the characteristics of urban wages. Moreover, since 1965 farmers have been eligible for pensions and other social benefits similar in kind to those of urban workers. In addition, workers on state farms, who are a regular part of the state labor force and have always been paid under a formal industrial-type wage system, represent a rapidly increasing share of total agricultural employment. Hence, it now seems appropriate to assess in a preliminary way the availability and quality of the statistics relating to agricultural money incomes.

State Farm Workers. The data on average wages of wage and salary workers employed on state farms and in subsidiary agricultural organizations are reported in the same way as for all other employees in the state sector. All comments already made with respect to the meaning, derivation, and quality of these wage data apply to the data for state agriculture. As with the overall data, absolute ruble values for this category were first published in *Narkhoz 64*. The most complete statistics are published in *Trud v SSSR*, giving average monthly earnings for 1940, 1945, 1950, 1955, and 1960–66 for three class-of-worker categories and for all groups combined in 1967. Except for the transfer of a small portion of state agricultural employment to the industrial and construction categories in 1968, the wage and employment series apparently are consistent in scope and coverage.

Collective Farmers. Until about 1965–66 the term "wages" could scarcely be applied to the incomes received by the largest single group in the Soviet labor force—the 35–40 million collective farmers—the kolkhozniki. Their remuneration was based on extremely complex calculations of workday (*trudodni*) credits, the total earnings being, in effect, the residual of farm income in cash and in kind remaining after specified

prior obligations had been met. Beginning in 1953 various forms of advance payments were introduced on the farms, but the arrangements were more or less haphazard, were far from universal, and varied widely throughout the country and over time. In 1966 the farms began to introduce guaranteed monthly wages on a wide scale, and by 1968 almost all farms had adopted this form of payment, thus taking the kolkhoznik a giant step toward the status of an ordinary urban wage earner like his counterpart on the state farms. Along with these changes in the method of payment the state was gradually monetizing the peasantry, rapidly raising farm incomes through higher procurement prices and other benefits to the farms, and setting up universal pension arrangements for the farmers.

Except for military matters, in no area of Soviet life has the government's statistical output been more meager—and probably also more fallacious—than on the subject of peasant incomes. Aside from tables showing how many times real incomes (vaguely defined) of the peasants had increased since 1913, the statistical handbooks (including the special handbook on agriculture published in 1960) contained nothing at all on the subject until *Narkhoz 67* appeared in late 1968. This handbook provided data for 1965, 1966, and 1967 on total and average payments of money and in kind per man-day made by collective farms to their members for work in the socialized sector.[35] These crumbs of data can be used to obtain an estimate of average annual earnings by multiplying by an estimated number of man-days worked per year that can be pieced together from various Soviet sources. The series thus derived can be extended backward by use of an index of average annual earnings for 1953–65 reported in a Soviet agricultural journal.[36] This measure tells us something about peasant incomes, but not very much. In 1953 perhaps as much as two-thirds of a peasant's total income took the form of cash and produce from his private plot; the proportion evidently has fallen steadily, perhaps to about two-fifths.

The quality of these meager data on "wages" paid by collective farms to their members is difficult to assess. The two sentences of explanation merely state that payment for the labor of kolkhozniki includes the total amount of money (including bonuses) and produce allocated by the farms to payments to their members for work of all kinds and that state retail prices are used to value in-kind payments of wages to the kolkhozniki and also sales of produce to them in payment for work.[37] Evidently, the data were compiled from the regular annual reports of the collective

35. *Narkhoz 67*, p. 466.
36. *Ekonomika sel'skogo khoziaistva*, 1967, no. 3, p. 20.
37. *Narkhoz 67*, p. 936.

farms to TsSU. That agency's work plan for 1965 scheduled the preparation of an annual report, "Results of the Economic Activity of Collective Farms," which included data on payment for the work of kolkhozniki broken down by republic, kray, and oblast'. A separate report (a part of a larger report) was to deal with collective farms that had adopted a system of money payments for labor. The reporting by collective farms to TsSU may be no better or no worse than that of state enterprises; presumably the pressures of the system would favor underreporting, but Nove's "law of equal cheating" may apply here. We simply do not know. Judging from the horrendous "scandals" in agricultural production reporting that are occasionally revealed, as by Khrushchev in 1961, matters may be much worse with respect to agricultural reporting. The accuracy of financial reporting from the collective farms still awaits scholarly investigation.

The comparability and consistency as well as the interpretation of the series on collective farm "wages" during 1953–67 would be affected by the transfer of machine-tractor personnel to the collective farms in 1958–59 and by the conversion of numerous collective farms to state farms during the late 1950's and early 1960's. Moreover, it is important to note that the data relate to earnings from all kinds of work carried out on behalf of the collective farms. They include pay for construction labor, industrial work, and services of all kinds and thus are not measures of incomes from purely agricultural activities.

Other Statistics on Money Incomes

In order to assess fully the levels and trends in personal incomes in the USSR one needs data on incomes from private activities. Such data are critical to an appraisal of incomes of collective farmers, because income in kind and in cash from work on the private plots has always formed a major (although decreasing) share of total incomes. Private plots are also held by wage and salary workers, especially those employed on state farms, although to a lesser extent. According to a Soviet source, income from private plots constituted 42 percent of the total income of peasants in 1965 and 6 percent of the total income of wage and salary workers.[38] Also, some doctors, lawyers and other professionals carry on legal private practices in addition to their state-paid jobs. Finally, an unknown but perhaps fairly large number of people engage in a wide variety of semilegal or illegal economic activities that yield them incomes. Nothing

38. V. F. Maier, *Dokhody naseleniia i rost blagosostoianiia naroda* (Moscow, 1968), p. 108. Another source states that the share of income from private plots in total real income of the population rose from about 17 percent in 1960 to almost 20 percent in 1968. N. I. Buzliakov, *Metody planirovaniia povysheniia urovnia zhizni* (Moscow, 1969), p. 67.

is known about the size of incomes from these diverse sources. Incomes from legally permissible private activities are taxable, and statistics on such incomes are collected by the financial organs, but no information about them is published.

Because data on incomes from private activities are essential for planning consumption and the financial balances, the government does collect information on such incomes through a continuous sample survey of worker and family income and expenditure budgets.[39] The incomes surveyed are supposed to be all-inclusive—wages, income from the collective farms, income from private farming and other private activities, and transfer payments such as pensions, social security grants, and student stipends. Evidently these surveys are the source of the fragmentary information on private incomes that is occasionally to be found in Soviet sources. The surveys are also the source of the guarded observations occasionally appearing in the works of individual Soviet writers, but not in the official handbooks, about the distribution of workers or families by level of income.

The budget surveys are conducted monthly by personal interviews and include some 62,000 families of wage and salary workers and collective farmers. The information collected is extremely detailed. TsSU processes the results in the form of a number of reports, including annual distributions of families by level of income. The importance attached to these surveys as a source of information not otherwise collected is indicated by the fact that the processing of these data forms a separate section of TsSU's annual work plans. Although the sample data are processed and presumably blown up to represent universe data, the Soviet government evidently classifies them as state secrets. Therefore, Soviet authors in writing about changes in income distribution and differential levels, generally in connection with discussion of forecasting demand and consumption, merely present data by income groups (I, II, III, etc.), with no ruble figures attached, or refer to hypothetical (*uslovnye*) numbers.

In addition, data yielding frequency distributions of wage and salary workers by level of wages are obtained through special surveys similar to those that were made during 1924–30 and in 1934. In the postwar period these surveys have been conducted in March of 1956, 1959, 1961, and 1965; they required detailed reporting from all state enterprises and organizations on the number of wage and salary workers and the total wage fund and also on the distribution of those who worked

39. For a thorough description of these surveys see John W. DePauw, *The Soviet Statistical System: Continuous Sample Budget Survey*, International Population Reports, Series P-95, no. 62 (Washington, Jan. 1965).

a full month by labor grade and salary and by total earnings. More detailed data were obtained from a concomitant sample survey (except for 1961), but neither the nature of the sample nor the kind of data obtained have been explained in any detail. In September 1958 a special sample survey, the first of its kind, was made of the income and composition of 240,000 families in nonagricultural branches. The representativeness of this special survey, as well as of the periodic budget surveys, has been sharply criticized.[40] In any event, neither it nor the other periodic surveys have yielded published data on wage and income distributions. Only several rough graphs are available showing, without any numerical scales attached, the apparent general shape of the wage and income distributions obtained from the sample budget surveys and in the other periodic surveys.[41]

The Soviet population also receives money incomes from the state in payment of pensions, grants of various kinds, and student stipends. Information on the number of persons receiving such incomes and their average amounts is extremely meager. The annual statistical handbooks usually provide data on total expenditures by the state and other organizations for all kinds of pensions and grants, with a breakdown only for total pensions. Other tables give state budget outlays for grants to mothers with many children and mothers without spouses and also a not very detailed breakdown of expenditures from the state budget for social insurance.[42] The handbooks give the total number of pensioners with two gross breakdowns: those receiving pensions on account of old age, disability, long service, loss of breadwinner, and other reasons; and former servicemen and members of their families.[43] The total number of collective farmers receiving pensions is also available for the years since 1965. Also available is the total number of mothers receiving grants under the family allowance program.[44] Expenditures for stipends in 1950–57 are given in a handbook on the budget,[45] but for subsequent years they can be estimated only by projection on the basis of the reported number of full-time students in higher and secondary-specialized in-

40. N. M. Rimashevskaia, *Ekonomicheskii analiz dokhodov rabochikh i sluzhashchikh* (Moscow, 1965), pp. 59–62. Another source declares flatly that the continuous budget survey is not representative. N. I. Buzliakov, p. 168.

41. M. Mozhina, *Biulleten' nauchnoi informatsii: trud i zarabotnaia plata*, 1961, no. 10, pp. 24–25; V. I. Raitsin, *Normativnye metody planirovaniia urovnia zhizni* (Moscow, 1967); Rimashevskaia, pp. 60–61, 84.

42. Typical of these data are those in *Narkhoz 67*, pp. 888, 890–91.

43. Ibid., p. 706.

44. Ibid., p. 705; *Narkhoz 65*, p. 606.

45. TsSU, *Raskhody na sotsial'no-kul'turnye meropriiatiia po gosudarstvennomu biudzhetu SSSR* (Moscow, 1958), p. 46.

stitutions.[46] When compared with the wealth of data on the operations of social security and related systems in the West, this statistical output from the Soviet Union is put to shame.

Statistics on Real Wages and Incomes

Real Wages. In the postwar period, officially published data on real wages have been very scarce, and none pertaining to the USSR as a whole have been published since 1956. The first postwar statistical handbook included data giving indexes of real wages of wage and salary workers for 1955 compared with 1950 and 1940 and of production workers in industry for 1955 compared with 1940. The 1956 handbook added data for 1956, and the first handbook on industry provided an index of real wages of production workers in industry for 1955 over 1940 and 1950. The indexes in these sources were described simply as the quotients of indexes of money wages divided by indexes of the prices of goods and services. Although no later national statistical handbook includes an index of gross real wages, several recent handbooks for individual republics include such an index for various periods (Uzbek, 1958–66; Ukraine, 1958–68; Latvia, 1958–65). This definition also evidently forms the basis for recent work on regional differences in real wages[47] and was also used in the studies of the growth of real wages and labor productivity published by several Soviet scholars during 1959–63. These authors provide figures on trends in real wages for additional years and sectors, but do not make clear whether the data are official or their own estimates.

The officially published indexes of real wages were severely criticized by one Soviet scholar on the grounds that they pertain to gross earnings rather than to earnings net of taxes and other state-imposed deductions from wages.[48] Although this critic supplies an index of net wages for 1950–58 as an "example" in his study, an official index of net wages has yet to be published. According to a recent book on planning methodology, however, current Soviet planning and statistical practice is to calculate real wages net of income and bachelor taxes and taxes on small families.[49] A Soviet author points out that this method overstates the real purchasing power of workers by the omission of other kinds of taxes and levies and may also overstate its rate of growth.[50]

46. Bronson and Severin, p. 528.
47. See note 14 above.
48. Figurnov, p. 119.
49. Gosudarstvennyi planovyi komitet SSSR, *Metodicheskie ukazaniia k sostavleniiu gosudarstvennogo plana razvitiia narodnogo khoziaistva SSSR* (Moscow, 1969), p. 514.
50. Buzliakov, p. 146.

Real Income. Subsequent statistical handbooks have shifted to a concept of real income, and each has included various tables relating to it. Several changes have been made in the kinds of data provided and also some redefinition evidently has occurred, for the indexes are not entirely consistent. Beginning with 1958 all of the annual handbooks except those for 1965 and 1968, as well as *Trud v SSSR*, have included tables giving indexes of real incomes of wage and salary workers and real income of collective farmers, calculated per person employed, for various years 1940–67. The 1965 and 1968 handbooks include a table on the growth of per capita real income. The indexes published in *Narkhoz 63* and thereafter apparently are not fully comparable with those published earlier, at least one reason being that the definition of real income was broadened in 1963 to include some additional kinds of state-paid benefits, and perhaps in other ways.

In addition, all of the annual statistical handbooks except the first two and most of the specialized handbooks include a table or tables intended to show how much better off the workers and peasants are under socialism than they were in 1913. With some minor variations among handbooks these tables provide (in total) annual data for 1956–68 as a percent of 1913 with respect to the following: (1) average real wages of production workers in industry and construction after taxes but including state-paid benefits; (2) the same with an allowance for the abolition of unemployment; (3) the same with an allowance for the reduction of the workweek; (4) average income (money and in kind) of peasants after taxes and levies; and (5) real incomes of the peasants from agriculture, including state-paid benefits. Incomes of the kulaks are excluded from the 1913 figures on peasant incomes. To the extent that a check can be made, the data in these tables seem to be consistent with data in the other tables on real incomes of wage and salary workers and of peasants discussed above.

The explanation given in the handbooks of how these indexes are calculated and what they mean is skimpy indeed. As best one can make out from these sources,[51] the index pertaining to wage and salary workers describes the following incomes: all wages and similar payments received from state and cooperative organizations; pensions, social security benefits, and student stipends; payments from the financial system (e.g., interest on state bonds and savings deposits); and net income from private activities. Incomes of the peasants include incomes from the

51. The most detailed explanation is given in *Narkhoz 59*, pp. 829–930. This explanation is repeated in *Narkhoz 60, 61* and *62*. Subsequent handbooks contain the mere statement that the index of real incomes of the population is calculated from indexes of real incomes of wage and salary workers and of peasants.

collective farms in money and in kind, net income in money and in kind from private activities, wages and similar payments received from state and cooperative organizations, pensions, social security benefits, and student stipends, and other payments from the financial system. To the total income for each group is then added the appropriate share of the total material expenditures of communal service enterprises and organizations. From the total are then deducted cash expenditures on services, payments into the financial system (taxes and similar levies), and dues to social organizations. Other types of so-called "incomes" may also be included, e.g., housing subsidies, although they are not explicitly mentioned. The total incomes are then revalued in constant prices and divided by the number of persons in the respective groups. According to a Soviet text on planning the level of living of the population, incomes in kind received from the collective farms in payment for work are valued at state retail prices.[52] Incomes in kind from the private plots are valued at the prices actually realized for the part that is sold, and for the part that is consumed, at the average prices at which the respective products are actually sold by collective farms and private farmers.

With respect to wage and salary workers the statistics recently published on the "gross social money wage" already described provide data in rubles that give what must constitute the major part of "real income" as so defined. Using these data, which are the sum of average money wages plus payments and benefits (*vyplaty i l'goty*) with leave payments explicitly not double-counted, one can calculate an index of real gross social wages by dividing by a price index (weighted index of state retail and cooperative prices and prices on the collective farm markets). Similarly, an index of "net social real wages" can be calculated roughly by deducting personal income taxes. Both such indexes show more rapid increases than the official index of real incomes of wage and salary workers. With 1950 taken as 100, the three indexes for 1967 are 219, 225, and 208, respectively; for 1967 relative to 1960 they are 127, 128, and 118. The official index of real incomes clearly measures something other than the deflated summation of money incomes plus benefits minus taxes. Similar comparisons cannot be made with respect to collective farmers.

The exact nature of the published indexes of real income remains a puzzle. Various Soviet texts on statistics describe in varying detail the calculation of indexes of real incomes, but whether these descriptions pertain to the index actually published is never made explicit.[53] These

52. Buzliakov, p. 86.

53. A. I. Ezhov, *Sistema i metodologiia pokazatelei sovetskoi statistiki* (Moscow, 1965), pp. 269–73. *Vestnik statistiki*, 1966, no. 9, pp. 40–52.

descriptions are considerably more detailed than the ones given in the handbooks. By far the most detailed descriptions are included in two recent books on planning methodology, which explain the calculation of "final (actually used) income in constant prices"—*konechnye real'no ispol'zuemye dokhody v sopostavimykh tsenakh.*[54] If the published index of real incomes does indeed pertain to the description as given in these two sources—as seems likely—it represents the "expenditures" counterpart to the "consumption fund" in Soviet national income terminology. This fund includes personal consumption plus material expenditures of institutions serving the population (but explicitly excluding scientific institutes and government administration). Under this definition, in addition to the inclusions and exclusions mentioned above, "incomes" in each year would allow for the net change in savings and cash in the hands of the population, the net change in indebtedness, the gross value of cooperative housing, and depreciation on state housing. One Soviet source states explicitly that the size and rate of growth of total real incomes and the consumption fund are practically identical.[55]

Attempts of mine to reproduce the official index of per capita real incomes from Soviet data and the assorted description of its composition came to naught. According to several descriptions, the index is supposed to reflect the part of the national income that is used in consumption, personal and public. But the published index of real income per capita grows more slowly than an index of per capita consumption that can be calculated from official national income data and official price indexes. For 1950–67 the former is 256 and the latter 283, and for 1960–67 the former is 135 and the latter 139. Several other attempts of mine to duplicate the real income index, using various other assumptions as to its coverage, yielded greater differences than these, and invariably the constructed indexes grew faster than the official index. Since quite similar price indexes likely were used in all cases, the divergencies are hard to explain. The real income index being mostly an index of money incomes of the population (deflated) and the index of consumption being mainly an index of expenditures on "goods" (deflated), the fact that the latter grows more rapidly could mean the availability of unaccounted-for money incomes. But there may be other explanations similar to those adduced by Janet Chapman.

The two recently published books on planning methodology also describe in some detail the procedure for distributing total calculated real incomes between the two social groups "wage and salary workers" and "collective farmers." Evidently, this is a difficult task for the planners

54. See source in n. 49 above, pp. 497–515; Buzliakov, pp. 74–104.
55. See source in n. 49 above, p. 497.

to accomplish with the data available to them. Although the procedure is much too complex and confusing to describe here, two general characteristics should be noted: (1) the procedure relies heavily on estimates, rather than direct data, that have to be put together from a wide variety of sources, of which the continuous family budget surveys are evidently very important; and (2) the two groups whose real incomes are measured are not the same as the groups with similar titles described in other statistical measures, such as employment. Thus, "real incomes of wage and salary workers" include incomes of all of the military officer corps, incomes of family members other than the head who live and work on collective farms, students whose family head belongs to that group, pensioners who were former members of that group, and "the rest of the population" (all others except those fitted into the group "collective farmers").[56]

The Price Indexes. Soviet sources state that the official index of real wages is obtained by dividing an index of money wages by an index of prices of goods and services.[57] Nowhere is this price index reproduced or its composition and weighting explained in any detail. We know only that it is some kind of a composite of separate indexes of prices in state and cooperative retail trade, collective-farm market prices, and prices (tariffs) for services. The three indexes apparently are combined with given year weights representing the relative shares of their respective purchases in the total expenditures of wage and salary workers and of collective farmers respectively. Since purchases in state retail trade form the overwhelming share of total expenditures (84 percent in 1950, 90 percent in 1960, and 92 percent in 1967), the state retail price index obviously dominates the composite index.

According to Soviet sources, real incomes are deflated by a complex, multistage process which can be described in summary fashion as follows.[58] Money incomes are deflated by weighted index of (1) prices in state and cooperative trade, (2) prices on the nonvillage collective farm markets, (3) prices on village collective farm markets, (4) rent and housing-related charges, and (5) prices for personal repair and related services. The weights are the shares of each source in total expenditures. Deflation is made separately with respect to incomes of wage and salary workers and of collective farmers, and the weights for each group are those reflecting the structure of actual expenditures as revealed in family budget surveys. Material expenditures of institutions serving the public

56. Buzliakov, pp. 93–94.

57. For example, *Vestnik statistiki*, 1956, no. 9, pp. 46–47; Ia. D. Kats, *Ocherki statistiki truda* (Moscow, 1960), pp. 94–98.

58. Ezhov, pp. 272–73. Buzliakov, pp. 89–92, 100–102.

are deflated by a separate index whose method of calculation is unexplained.

In assessing the indexes of real wages and real incomes the validity of the official state retail price index clearly is the key question. Despite the fact that Soviet books on domestic trade devote entire chapters to statistics on prices,[59] the "insides" of the official retail price index remain a considerable mystery. The only characteristics that are stated without ambiguity are that given year weights are used to aggregate the price relatives in each year and that these weights are the actual value of sales in rubles in that year for the commodity group concerned. It is also clear that an arithmetic average is used to aggregate the price relatives for individual groups of products, and not a harmonic average as has sometimes been supposed. The index is a chain-link index in which the prices of each year are related to those in the immediately preceding year.[60] Soviet statisticians claim that once every five or six years a special index is computed directly comparing the prices in that end year with those in a base year five years earlier.[61] This is done in order to gauge the impact of changes in the structure of sales within product groups over relatively long periods. The results of such comparisons have not been published.

All Soviet sources state explicitly that the official retail price index is computed on the basis of prices included in state retail price lists (*preiskuranty*). The only price changes that can affect the index, therefore, are those that are recorded on these lists. Although the lists are voluminous, not all of the several million state-fixed retail prices are listed; for some groups of products (e.g., vegetables) where prices are set by local organs, they are actually listed only for certain "representative" products. There may be other elements of sampling used in constructing the price indexes, but in any event there is no information about how the samples are taken, and no judgments can be made about representativeness. The price lists are kept by the government bodies at various levels responsible for setting the various kinds of prices. These bodies submit quarterly reports (monthly for seasonal products) to TsSU on any changes made in the price lists, and on the basis of this information TsSU computes the official price indexes. Soviet sources report that because of the limitations of the trade statistics that are collected (no physical quantities, breakdowns by general categories only), obtaining suitable weights to use in determining the effect of selective price changes in a given group (e.g.,

59. N. N. Riauzov and N. P. Titel'baum, *Statistika torgovli* (Moscow, 1968), pp. 190–243. I. F. Katal'nikov, *Statistika sovetskoi torgovli* (Moscow, 1966), pp. 135–51. For additional analysis of the index, see Chapter 16 in this volume by Morris Bornstein.

60. S. G. Stoliarov, *O tsenakh i tsenoobrazovanii v SSSR* (Moscow, 1969), pp. 102–18.

61. *Vestnik statistiki*, 1961, no. 2, p. 68.

on certain brands of watches only) often poses difficult problems and necessitates the use of assorted compromise weights.[62]

Soviet sources also make it clear that the establishment of temporary prices on new products and on products of "improved quality" and the replacement of these temporary prices with permanent prices are not considered price "changes."[63] Moreover, the index is not affected by the price reductions that are made from time to time on goods that are not selling and are piling up in inventories.[64] Neither is a price considered changed when a new price is set on an existing product as a result of "a change in a state standard, grade, or technique of production of that product in connection with a change in its quality, style, size, etc."[65] The numerous decisions of individual clerks and statisticians as to what are "old" and "new" goods thus are critical to the behavior of the price index, as the Soviets themselves have noted. One critic of the official index states:

> A virtue of the present method of calculating the retail price index is that it is based on very broad information about changes in prices. The changes in prices on all existing categories of products are carefully taken into account in the index of retail prices. However, prices on new goods which had not been produced earlier exert a significant influence on the general level of retail prices. If a new good that does not differ essentially from an existing good that it replaces is introduced on the market, then the differences in prices may not be taken into account. Therefore, especially under conditions of rapid increases in the production of consumer goods, the appearance of new products and models may be a source of hidden changes in prices which may not be fixed statistically and may not be reflected in the index of state retail prices.[66]

In short, it appears that revised prices on products arbitrarily designated as "new" or "improved" could be easily linked into the chain index with, of course, zero effect on the measured index of prices between Period 1 and Period 2.

A number of questions can be raised as to the propriety of the use of such an index as a major component in the deflation of money incomes to obtain measures of real incomes. First of all, the index is an index of discrete changes in prices on state price lists and not an index of prices actually paid by consumers. There is considerable evidence of what may

62. Ibid., pp. 59–68.
63. *Narkhoz 67,* p. 948; Stoliarov, p. 106.
64. Ibid.
65. Riauzov and Titel'baum, p. 195.
66. E. V. Kasimovskii, ed., *Problemy ekonomiki truda* (Moscow, 1965), p. 174.

be fairly widespread violation of state retail prices by the stores. The use of such an index under Soviet conditions of general scarcity of consumer goods, moreover, is akin to judging prices (and changes in levels of living) under price controls in wartime in the U.S. on the basis of an index of legally fixed ceiling prices.

Under Soviet conditions—chronic scarcities and incentives geared to maximizing value of output, sales, or profits—such a price index probably takes proper account of the effects of changes in product quality far less efficiently even than do the price indexes in market economies. Soviet enterprises have a strong and direct financial incentive both to violate quality standards on old products and to classify products as "new" or "higher quality" so as to have higher prices fixed for them. The Soviets continually claim ever greater improvement in the product assortment and quality of consumer goods. How extensive the sales of goods under temporary prices is we do not know. Here is a bit of evidence: at the beginning of 1967 they were in effect for 359 types of shoes. In addition, comments such as these are often found in the literature: "In some cases shoes not differing essentially from old ones are included in the category shoes of better quality; . . . some enterprises produce shoes of lower quality than the specifications, and trade enterprises accept them with price supplements anyway; . . . after removal of the price addition for higher quality some enterprises stop production of the better shoes."[67]

Data available with respect to leather shoes permit some calculations that suggest the need for more thorough research on Soviet retail trade and price statistics than has been done up to now. During 1955–65 the official retail price index for leather shoes showed no change. During the same period the average "price" or value of a pair of shoes sold increased 23 percent. To explain all of this change by the greater share of imports would require that the average price of a pair of imported shoes should have been sold at more than double the average domestic price and that its price should have more than doubled during the period. During 1960–65 when imports actually dropped as a share of the total expressed in physical units, the average value of a pair of shoes increased by almost 5 percent. The sizable assortment changes that would have had to take place to explain the rise in average values are difficult to imagine. But a Soviet source states that new models comprised 8 percent of total output of leather shoes in 1959, 25.3 percent in 1960, and 37.9 percent in 1964, and subsequently complains that prices have proved inadequate in stimulating the output of new and higher-quality products.[68] I present

67. Stoliarov, p. 44.

68. L. P. Fedorova, *Problemy vzaimodeistviia torgovli, proizvodstva i potrebleniia v period stroitel'stva kommunizma* (Leningrad, 1968), pp. 27, 56–57.

these data as a question without an answer. In the final analysis, however, the most important questions pertain to the extent to which any price index, no matter how technically faultless, can adequately measure changes in real welfare in the Soviet context.

With the Soviet practice of using a chain index in deflating retail sales and other consumption aggregates, the role of the index of collective-farm market prices has become less significant with the decline in the share of collective-farm market purchases in total retail trade (from 12 percent in 1950 to 4.5 percent in 1960 and to 3 percent in 1967). The calculation of this index is of interest, nevertheless. The index is calculated by TsSU on the basis of a sample of prices prevailing in collective-farm markets in 251 cities. The representativeness of the sample and the techniques of collecting and averaging the price data have been investigated with care by Jerzy Karcz, who finds them wanting,[69] as also do Soviet statisticians.[70] The published price index may understate price changes over time, but in any event its influence on a general cost-of-living index is small. The same comment applies to the index of the prices of services that forms a part of the total index, inasmuch as their share in total consumer outlays is small (7–8 percent) and has remained fairly constant in recent years. Nothing is known about the composition or methodology for this index, except that it evidently includes rent, gas, electricity, water and heat, personal services such as barbers and hairdressers, recreational services such as movies, public transport, and perhaps some other services. Soviet sources are amazingly silent about this index, considering the fact that it probably has been stable, like the retail price index, over the past decade.

In summary, this preliminary exegesis on Soviet retail price indexes raises more questions than it answers and indicates a need for a thorough investigation of these indexes and of retail trade statistics in general. There is no good way to construct an independent index of state retail prices by obtaining price quotations for recent years, as Janet Chapman did for the prewar period with considerable success. Price handbooks are not available, and the price quotations that might be assembled from reports of travelers would form a poor sample. I suspect that the price index has been too flat since 1955; it would almost have to be flat by definition, because it is an index of "official" prices and must reflect the current official policy of maintaining stable retail prices except for certain well-publicized changes in specific prices. A rigorous test of this

69. Jerzy Karcz, "Quantitative Analysis of the Collective Farm Market," *American Economic Review* 54 (June 1964), pp. 315–34.

70. I. K. Beliaevskii, *Statistika kolkhoznoi torgovli* (Moscow, 1962), pp. 56–59; *Vestnik statistiki*, 1960, no. 12, pp. 52–59. Riauzov and Titel'baum, pp. 187–88.

hypothesis would require the systematic assembly of the evidence from the Soviet press on how retail prices in practice deviate from what they are supposed to be. This approach would hardly yield an alternative price index, but it might provide a basis for judgment as to the likely direction and possible extent of any bias. My impression from such evidence of this kind as I have seen is that the bias is downward.

Conclusions

In considering the usefulness of Soviet published wage and income statistics for analytical purposes one needs answers to two questions. First, are the published data reasonably complete, reliable, and consistent over time? On this fundamental question this chapter offers the following tentative conclusions with respect to the data available for the postwar period, particularly after 1955: (1) On the whole, the data on money wages for the state labor force are reasonably complete, reliable, and consistent, but the data omit some earnings that would be considered wages in the West and the detail of the published data is meager; (2) the data on earnings of collective farmers are inadequate and incomplete; (3) real-wage indexes are no longer published, and the indexes of real income that have been substituted are not well explained, are excessively comprehensive (i.e., they apparently measure real material consumption by Soviet definition), and cannot be fully reconciled with other Soviet data; (4) some small groups in the labor force are not covered by either set of statistics, and no official statistics are provided on earnings from private activities, still an important source of income in the USSR even after fifty years of socialism; and (5) the official price indexes have conceptual shortcomings and may be inappropriate measures by which to deflate money wages to ascertain trends in real wages in the Soviet context.

Second, for what analytical purposes are the data to be used? Two important and interesting questions leap out. What has been the course of real wages and incomes of the work force under Soviet socialism, both over time and relative to capitalist countries? What is the present degree of wage and income inequality, what have been the trends since the advent of socialism, and how do they compare with those in other systems? It would also be interesting to know how money wage differentials have developed over the years and how they differ from those in capitalist labor markets.

With respect to the first question, Janet Chapman has provided convincing evidence that the published indexes in the prewar and early postwar period greatly overstate the actual measurable increase in real wages of the urban labor force. While the degree of distortion of the consumer

price index cannot be measured for the period since 1955, the official price index may be merely a statistical artifact that may not reflect the real world with much precision. I suspect that the quality and new-product changes in the mix of consumer goods may have entailed considerable hidden price inflation, especially in the past decade. If so, money wages and real wages have not increased at approximately equal rates since 1955, as is implicit in official retail price indexes and indexes of money wages. There is, of course, the broader question of whether any real-wage index, no matter how faultless, can measure changes in welfare with much precision in an economy characterized by planners' rather than consumers' preferences, chronic shortages of goods and services, and producer incentives geared to maximizing gross value of output. This interesting theoretical point has been well explored elsewhere.[71]

Soviet socialism has promised to achieve greater equality of incomes than results from capitalist exploitation of man by man. Quite possibly greater equality has indeed been achieved, especially in the past fifteen years. This period has been one of rapid change; the legal minimum wage has more than doubled in the state sector; wages in low-wage branches have been raised relative to high-wage branches; and agricultural money incomes have risen spectacularly relative to urban incomes. How much equalizing of wages and incomes has in fact taken place remains a mystery, however. Although the Soviet government assiduously collects the requisite data in sample surveys, it publishes none of the results. To shed light on the USSR's achievement in this regard, Soviet economists and Westerners alike must draw heroic conclusions from indirect and excessively aggregated data. Bergson's penetrating study of the structure of Soviet wages in the prewar years[72] cannot be duplicated for the postwar period. Changes in earnings differentials by level of skills can be perceived only dimly from the gross data that the Soviet government chooses to release. And nothing at all can be said as to whether equal pay for equal work prevails with respect to the earnings of males and females. One can merely observe that, as in market economies, there is a high inverse correlation between the percentage of women employed and the level of wages by sector of the economy.

A final brief word might be said about the usefulness of Soviet wage and income data for planning purposes. If planners had recourse only to the data that the Soviet government chooses to publish, they would indeed be in a difficult position. In the reporting required of enterprises and collective farms, however, voluminous detailed and evidently quite

71. Chapman, pp. 34–44.

72. Abram Bergson, *The Structure of Soviet Wages* (Cambridge: Harvard Univ. Press, 1954).

complete data are collected on wages and related payments to the population. These are supplemented for omitted groups by reports from state organs, and both sets of data are processed as reports by TsSU. These data should be adequate for compiling the balance of money incomes and expenditures of the population, one of the major planning balances. The estimation of income in kind and the forecasting of demand are another matter. The data required for this are derived from sample surveys that could be quite faulty and that have indeed been severely criticized by Soviet economists themselves. These remarks also apply to the data required to plan the level of living or "the fund of real incomes of the total population."

As for the price indexes required to express wages and incomes in real terms, the questions posed in this paper about these indexes could mean that the increases in welfare that are planned may be in part illusory. In any event, the quality of the planning of labor force and income variables probably is not greatly impaired by inadequacies in the underlying data. Rather, it seems to depend much more on the extent to which the planners take cognizance of past experience and the realities of the Soviet scene and allow them to influence the plans. Evidently there has been relatively little of this realism, for the deviation of plan from performance in this area has been considerable over the years.[73] But it is doubtful whether a bigger and better data base would have produced a different outcome. The plans with respect to real wages and incomes are evidently not operational plans, but rather mere aspirations or ideals.[74]

73. For a review of plan performance in the labor field see Gertrude E. Schroeder, "Labor Planning in the USSR," *Southern Economic Journal* 32 (July 1965), pp. 63–72.

74. The author wishes to thank David W. Bronson for research assistance in the preparation of this chapter.

14

Marshall I. Goldman

Consumption Statistics

A discussion among Western economists on the usability of Soviet statistics is a little like a session of college boys discussing their latest sexual conquests. Every time one person describes a particularly impressive episode, his friend interrupts with "That's nothing, listen to this. . . ." Similarly every time an economist starts to boast about how many deficiencies there are in the Soviet statistics he uses, his colleagues respond, "That's nothing, listen. . . ." Reading about the difficulties confronting the other authors in this volume, I must say that I sympathize with them but my problems top them all.

Analyzing past consumption and predicting future consumption is a difficult if not impossible task in any society. (Consumption statistics in this paper will refer primarily to material collected in the form of budget studies and sales volume.) First of all, it is necessary to deal with human taste and behavioral patterns which make consumption analysis as much a psychological as an economic study. Secondly, it is necessary to analyze the day-to-day practices of hundreds of millions of consumers and hundreds of thousands of actual and potential vendors. Therefore even if the statistical data collection were the best in the world, there would still be problems in trying to gather, process, and interpret such vast quantities of material.

Complicating this already difficult undertaking is the tendency to contrast consumption practices in one society with those in another society. Economists have devoted a good deal of thought to the problems of interpersonal comparisons and social welfare curves, but almost everyone will agree that the problem is far from being solved. This has become widely acknowledged as the concept of the "demonstration effect" is more widely understood. Thus ghetto residents in this country may enjoy material comforts exceeding those of the middle classes of many other poorer countries. Yet because our ghetto residents compare their consumption practices with those of middle-class citizens in their own country, they have come to feel deprived and abused. In the same way, someone who consumes considerably less in unpleasant surroundings may nonetheless feel quite well off if the only standard he has to compare himself with is also a poor one. As Solzhenitsyn put it when trying to

show that even within transit camps (the most dreaded of all the Soviet labor camps) there were some who considered themselves to be quite comfortable, "some people were well off even there—the ones who checked food packages and the bath attendants; there were some who could even shack up with the female prisoners and they'll go around telling everyone there's no better place on earth than a transit prison. After all, the very concept of happiness is conditional, a fiction."[1]

However difficult it may be to analyze consumption statistics, consumption analysis is still a necessary prerequisite for planning and economic stability. For a long time, economists both inside and outside the USSR have felt that this was not a crucial matter for the Soviet Union. Recently there has been increasing evidence of a change in attitudes. In fact there are some statisticians who now argue that the task ahead is even more complex for the Russians than it might have been because of their past deemphasis of consumption statistics. As noted by Ia. Khanelis of the Research Institute of TsSU and reflected in the *Plan statisticheskikh rabot na 1965 god* (Plan of Statistical Work for 1965) of TsSU, 90 percent of the statistical work done in the USSR at the present time is devoted to statistics associated with production.[2] This, Khanelis feels, is unsatisfactory if the Soviet system is indeed moving toward a state of full communism. Consumption will become an ever-increasing component of the GNP, and more consumption statistics will be essential for proper planning.

The move toward greater consumption, be it a concomitant of full or of goulash communism, is partially indicated by the increased emphasis now being given to consumer goods by Soviet planners. Thus the rate of growth in light industry exceeded that in heavy industry during the past two years—the first time this has happened since 1946. Khanelis believes this is a sign of more to come and in fact the same change in emphasis is reflected in the Ninth Five Year Plan for 1971–75; but given the present orientation in TsSU, he fears that the statistical apparatus is unprepared to cope with the new demands that will be placed on it. Thus from the planners point of view, the statistical system will become increasingly unsuited for the needs of sophisticated planning.

Exactly the same difficulty affects the planning of consumer services.

1. Aleksandr I. Solzhenitsyn, *The First Circle* (New York: Harper and Row, 1968), p. 30.

2. TsSU, *Plan statisticheskikh rabot* (Moscow, 1965), pp. 192–211; see also Iu. Vasil'ev, in *Vestnik statistiki*, 1968, no. 11, pp. 76–77. Actually the percentage is probably not much lower in the United States if only governmental statistics-gathering is considered. U.S. Bureau of the Census, *Statistical Abstract of the United States: 1968*, 89th ed. (Washington, 1968), pp. 757–85. But the private business sector in the United States more than compensates for this with its own statistical analysis.

According to Marxist economic theory, many services do not count as components of the GNP. There is a tendency to ignore services and concentrate instead on the production of material goods. Consequently statistical information about the provision of services is downgraded, which in turn makes it hard to provide information to the planners who might someday want to provide for an increase in service.

Our first task then will be to see what kinds of information are collected or not collected and made available by the statistical authorities. And then it will be necessary to see what use is and should be made of this material.

Strong Points in Soviet Statistical Procedure

Because the amount and variety of data to be collected is so enormous, a distribution system that is almost completely owned and operated by the state makes possible a much more precise, efficient, and comprehensive data-gathering operation. The powers of the state statistical authorities are much greater than they are in an economy with private ownership. Since the state owns the stores, there is no concern about infringing on private property or tampering with trade secrets. Contrary to most claims, however, some store managers in the USSR do hold back on what occasionally might be regarded as a competitive secret (such as the source of supply of some items). Yet this is more the exception than the general practice. For the most part, therefore, all material originating in the retail or wholesale sector belongs in the public domain and hence is potentially available for any analytic or planning purpose.

Another advantage of the Soviet system is that the state can establish uniform statistical standards and definitions throughout the country. One of the great difficulties confronting statisticians in noncommunist countries is that accounting and statistical definitions are established and coordinated poorly or not at all. As a result, once statisticians have finished digging for their information, they are required to spend equally long periods of time trying to reconcile their findings. The problem is especially critical in the sphere of private business, where every businessman has a tendency to vary his accounting definition to fit his own specific purposes. Whatever standardization there is comes about because of the voluntary adherence to statistical and accounting guidelines or because of the requirements of the tax laws. However, since even the tax laws and guidelines permit considerable leeway, there can be no guarantee that profit or depreciation in one department store will mean the same thing as profit or depreciation in a similar store. The same problem arises in ascertaining savings, household stocks, and family size.

In contrast, all Soviet statistical categories are established by official government agencies and are expected to be adhered to, although oc-

casionally there are conflicting definitions. Consequently it is possible to aggregate or disaggregate material in the Soviet Union with a fair degree of confidence that one is working with data that are consistent. Again there are exceptions, but there is relative certainty that the stores in one oblast' at a given period of time will classify costs of distribution the same way as the stores in other oblast's. This may prove difficult for some Russian managers and officials who feel the conditions they confront are unusual enough to warrant some variation in the uniform definitions. From the statistical point of view, however, centrally determined definitions are a distinct advantage.

As a result of the uniformity in definitions and of state ownership, most of the primary statistical material is concentrated in the hands of a few sources. This is a decided contrast to the United States, where it is necessary to seek out numerous agencies, both public and private, for such information. It is not unusual for the researcher in the United States to find that he has to dig for information from several private companies within one city, the chamber of commerce, municipal and state officials, any one of several trade associations, and a host of national agencies ranging from the Federal Reserve Bank to the Departments of Labor, Commerce, Agriculture, and Treasury. In the process it sometimes happens of course that each agency has its own definitions or no definition. It is because of such uncoordinated and autonomous activities that it is so difficult to obtain estimates of such things as the cost of distribution of all retailing and wholesaling operations in the United States. Two studies of the overall costs of distribution have been made, one by the Twentieth Century Fund and one by the National Bureau of Economic Research, and a series of studies are made for certain categories of stores, but there is no readily available figure for aggregate costs of distribution in the United States on a year-by-year basis as there is in the Soviet Union.[3]

Theoretically the consumption statistician in the Soviet Union can turn to only four official agencies for almost all the information he wants. The prime organization is either the Ministry of Trade or the ministry responsible for a particular enterprise. The majority of a firm's plans and reports are under the ultimate jurisdiction of its ministry. Secondly, units of Gosplan also possess information about an enterprise's past and future performance. Thirdly, like any good commercial banking system, Gos-

3. Harold Barger, *Distribution's Place in the American Economy Since 1869* (Princeton, N.J.: Princeton Univ. Press, 1955); Milton P. Brown and Eleanor G. May, *Operating Results of Multi-Unit Department Stores* (Boston: Harvard Business School, Division of Research, 1961); Wilbur B. England, *Operating Results of Food Chains in 1959* (Boston: Harvard Business School, Division of Research, 1960); and Paul W. Stewart and J. Frederic Dewhurst, *Does Distribution Cost Too Much?* (New York: Twentieth Century Fund, 1939).

bank has at its disposal not only a record of almost all inflows and outflows of cash and its sources and destinations, but it also has access to operating results. Finally TsSU is the chief statistical gathering agency responsible for the systematic collection and presentation of data. Not only does it generally collect material from the other three agencies and the enterprise itself but it has the right to go into the field and gather any additional information it deems necessary. Thus each year TsSU collects budget studies from 51,300 families dispersed throughout the Soviet Union.[4] V. Starovskii, the director of TsSU, has announced that the number of families in the sample was increased in 1968 to 62,000.[5] Data from such studies are used to make up 200 indices for planning and control purposes. Thus TsSU compiles ongoing indices of food consumption, money income, income in kind, living space, etc.

In addition to the four main sources of data, independent agencies periodically produce their own consumption data. This tendency has been accelerating in recent years. Depending on the initiative and resourcefulness of particular economists and administrators, some of the research institutions and stores have been conducting more intensive budget or market studies. Recently, for example, several organizations have been doing market research analysis in the hope that they can predict demand better. Most of these studies are still rather limited in scope and should be considered supplements to the main statistical operations. Yet some of the research institute work has pointed the way for the official state statistical agencies. In some cases the research institute studies are of better quality.

Although it has been mentioned in passing, it is worth emphasizing that the magnitude of the state's statistical operations is enormous. In addition to the 62,000 families covered annually, TsSU makes periodic studies that are more detailed and extensive in nature. In September 1958 they surveyed 240,000 nonagricultural families, or about 1 percent of all the urban families.[6] Starovskii has announced that studies of this sort will be conducted once every five years and that coverage will be increased to include 250,000 city families.[7] Apparently this many families

4. Some sources indicate that only 26,000 budgeting workers and employees are covered. A. Kh. Karapetian, I. L. Lakhman, N. M. Rimashevskaia, and Ia. N. Khanelis, eds., *Dokhody i pokupatel'skii spros naseleniia* (Moscow, 1968), p. 162. See John W. DePauw, *The Soviet Statistical System: The Continuous Sample Budget Survey* (Washington: Bureau of the Census, Jan. 1965), p. 8; A. I. Ezhov, ed., *Istoriia sovetskoi gosudarstvennoi statistiki* (Moscow, 1969), p. 432; and N. M. Rimashevskaia, *Ekonomicheskii analiz dokhodov rabochikh i sluzhashchikh* (Moscow, 1965), p. 54.

5. V. Starovskii, in *Planovoe khoziaistvo*, 1967, no. 7, p. 22; Ezhov, p. 432.

6. Rimashevskaia, p. 47; Karapetian et al., p. 157; and TsSU, *Itogi vsesoiuznoi perepisi naseleniia 1959 goda, SSSR* (Moscow, 1962), p. 242.

7. Starovskii, p. 22.

were actually covered in the 1967 survey. In addition, in 1968, 26,000 kolkhoznik families were surveyed, although it is not clear if they were asked questions comparable to those asked the 250,000 urban families.[8]

A study covering so many people is clearly beyond the wherewithal of any private organization and of most governmental units in a predominantly private enterprise system. If anything, it might be considered wasteful since most statisticians would doubt the need to survey as much as 1 percent of the population in order to obtain meaningful information. Similar surveys in the United States by the Bureau of the Census for the U.S. Bureau of Labor Statistics cover only 60,000 families as compared to 250,000 in the USSR. The fact remains, however, that the Soviet statistical organizations have much greater power to embark on statistical studies than their capitalist counterparts.

In the pages to follow we will see that the situation is not always as idyllic as has been indicated in the preceding pages. First of all, despite governmental ownership of all business enterprise, statistical definitions are not perfectly uniform. When we discuss the shortcomings of the Soviet system, we shall see where there is room for improvement. Secondly, even though a statistical concept may be uniformly treated, there are periodic definitional changes in terminology which make it difficult to compare the years before the change and after. Thirdly, like any private business operation, the Soviet organizations undergo periodic reorganizations which involve the rearrangement of organizations and accounting units. Inevitably the statistical definitions are also affected by such changes and require adjustments to make them comparable with earlier periods of time. Nonetheless, despite these qualifications, Soviet statistical coverage of consumption still enjoys an enormous advantage because of the general uniformity of Soviet statistics.

Shortcomings in Soviet Statistical Procedures

As already indicated, many of the problems in compiling and utilizing comsumption statistics are not unique to the Soviet system. But if the non-unique are added to the unique ones, then the list is uncomfortably long. It is not easy to classify the various kinds of difficulties that exist. The classification is therefore fairly arbitrary. Purely for purposes of convenience, the shortcomings will be grouped into the following categories:

1. Shortcomings because of gaps in the data or poor statistical collec-

8. TsSU, *Vsesoiuznoe soveshchanie statistikov, 22–26 aprelia, 1968, stenograficheskii otchet* (Moscow, 1969), p. 182.

tion practices. These affect both the measurement of consumption or family budget studies and the measurement of sales volume. Many of these difficulties are especially bothersome now that the system is moving away from a form of command economy.

2. Shortcomings that arise because the system generates or emphasizes the wrong kind of information or fails to generate the right information. Needless to say, many of the problems about to be discussed could fit into any of the specified categories.

Estimating Consumption from Budget Studies

Given the fact that TsSU conducted budget studies once for 240,000 families, and again for 250,000, one would think that no one would complain about inadequate coverage of consumer budgets and purchasing habits. Yet Soviet statisticians feel quite strongly that the consumer data they have are not representative enough for use by Soviet planners. There are several complaints. First the families covered in the massive studies of a quarter of a million families were picked according to their place or branch of work.[9] As a result, only incidental consideration is given to certain large areas and population groups. Thus the 1958 study left out families in the sovkhozy and kolkhozy. Omitted were not only the agricultural workers but those with industrial tasks on the farms. N. M. Rimashevskaia estimates that this has meant the omission of about 12 percent of what are normally referred to as workers.[10] She also complained that only 40 percent of the country's families were represented in the survey.[11] In some other studies, there is overweighting for peasants, and urban workers are virtually ignored.[12]

Similar omissions distort the smaller annual surveys. These studies shortchange the smaller republics. Thus O. Ia. Berzkaln says that out of the 26,000 families covered (these probably include only urban workers and employed families) there are only 100–200 budgets included from republics such as Latvia, Estonia, and Armenia.[13] Some oblast's have been completely neglected.[14] Other economists complain that more attention should be devoted to groups selected for their income and social characteristics as well as their branch of work.[15] Whatever the case,

9. Karapetian et al., p. 157, and Rimashevskaia, p. 30.
10. Karapetian et al., p. 157.
11. Rimashevskaia, p. 60, and Karapetian et al., p. 160.
12. V. V. Shvyrkov, ed., *Opyt primeneniia matematicheskikh metodov i EVM v ekonomiko-matematicheskom modelirovanii potrebleniia* (Moscow, 1968), p. 315.
13. Karapetian et al., p. 162, and Rimashevskaia, p. 60.
14. Shvyrkov, p. 23.
15. T. V. Riabushkin, ed., *Metodologicheskie voprosy v statisticheskikh issledovaniiakh* (Moscow, 1968), p. 345.

several economists insist that it is impossible to use Soviet budget studies for meaningful planning work until such data are obtained.[16]

To the average Western statistician, the thought of having 26,000 or 60,000 budgets to manipulate might more than compensate for the sample deficiencies just mentioned. Yet as Berzkaln has pointed out, the generation of such data on a continuing basis year after year creates its own artificial environment.[17] In what could be called the "Laboratory Family" effect Berzkaln has found that the families making up the budget study sample begin to react differently than other families not in the sample. After a time, the sample families begin to act just like commercially bred white mice destined for laboratory use. Reportedly these mice have developed characteristics that are different from those of the normal wild mice. Their reactions have supposedly become less spontaneous and seemingly more domesticated. Similarly recognizing that they are a special group, the families included in the TsSU budget study have reportedly become unusually orderly, precise, and careful in their spending habits. They take more time and care than they did previously in planning their purchases and hence they lose their representativeness. Berzkaln also argues that since the composition of the sample group is held fixed over the years, new and young families are not included in the sample in as large a percentage as they should be. Thus the predictive value of the sample suffers.

The budget surveys are weak not only because they do not properly sample the total population but because they do not attempt to ascertain all the information a planner presumably needs to make any predictions about the size and makeup of prospective sales or consumption. There are several aspects to this problem. An aspect that the Soviet authorities have had particular difficulty in coping with is how to reflect adequately the impact on consumption of the produce from the private plots. This includes not only the plots of the kolkhozniki but the gardens of many industrial and commercial workers. The magnitude of this figure and its impact on total consumption is indicated by the official acknowledgment that in 1967 such backyard plots were the source of about 40 percent of the country's milk and meat production, 60 percent of the egg and potato output and 40 percent of the vegetable harvest. All this was produced on only 3 percent of the country's cultivatable land.[18] The production and sale of products produced in such gardens is generally carried out in a most informal manner and therefore difficult to record. In most developed countries this is not a bothersome consideration because the share of

16. Karapetian et al., p. 162; Rimashevskaia, p. 60; Shvyrkov, p. 23.
17. Karapetian et al., p. 160.
18. *Narkhoz 67*, pp. 333, 352.

such gardens in the total sales of the country is relatively insignificant. This is not the case in the USSR, where production and sales fluctuations on the private plots are important in planning what proportion of consumption will be diverted from the state stores.[19]

At least one Soviet economist suggests that inadequate coverage of private transactions affects not only estimates of the consumption and sale of foodstuffs but of nonfood goods as well.[20] F. A. Krutikov quotes calculations which show that in 1964–65, some groups bought as much as 30 percent of their radio equipment in such markets.[21] Again these unofficial market arrangements can create serious distortions in any systematic compilation of the data.

A second shortcoming of Soviet budget data is that they do not provide the Soviet planner with much solid information about future sales of consumer durables. As opposed to accounting for direct sales between farmer and consumer, which is a problem peculiar to a less advanced state of development, anticipated sales of consumer durables is a problem associated with a more advanced stage of economic growth. Predicting the sale of consumer durables is a much more complicated matter than simply measuring the consumption of goods that are completely digested the day they are purchased and for which the demand is highly inelastic. Economists in the West have agonized for years about how to predict the demand for consumer durables. As a population becomes wealthier and the society moves away from a command economy, the task of measuring and anticipating shifts in consumer demand becomes more difficult regardless of whether the society calls itself communist or capitalist. The accumulation of large deposits in the savings bank and excess inventories on the shelves indicates the presence of disposable income. These funds can be used for sudden purchases that may be affected as much by whim as by reason. This task of anticipation becomes more complex as style and taste become more important. As Khrekin points out, research on demand estimation is not a mechanical operation. As tastes rapidly change, statistics and trade officials must be able to anticipate and catch the swings.[22] This requires up-to-date information, constant analysis, and wise judgment. It is partially in response to such needs that the new Institute of Market Research was created.

Anticipating the sale of consumer durables is especially difficult because these goods are not bought on a day-to-day basis. Moreover the sale of consumer durables has been increasing relative to the sale of other

19. Shvyrkov, pp. 345–49.
20. F. A. Krutikov, *Kon'iunktura rynka pri sotsializme* (Moscow, 1968), pp. 32, 33.
21. Ibid.
22. I. Khrekin, in *Sovetskaia torgovlia*, 1969, no. 4, p. 7.

goods. N. V. Zemnukhova points out that in 1965 consumer durables accounted for 25 percent of all nonfood goods sold, compared to 9.4 percent in 1958.[23] This tendency will grow as the Soviet Union produces and sells more automobiles to the private citizen. Most Soviet economists now realize that there is something different about estimating the demand for consumer durables. Unfortunately there does not seem to be unanimous agreement about just what it is that is different. In one of the simple formulations of the problem, F. Krutikov and B. Solov'ev present a generalized formula for consumer durables which simply relates sales of a particular durable to the overall change in retail sales volume. They suggest the formula

$$K = T_1\left(\frac{\Delta T_2}{\Delta T_3}\right)$$

K is the coefficient of the change in demand in the forthcoming plan period, T_1 is the rate of growth of all retail sales in the plan years, ΔT_2 is the rate of growth of the particular durable good in the given period and ΔT_3 is the rate of growth of all retail sales in the given or base period.[24] This assumes therefore that the increase in the sales of a particular durable will continue to bear a fixed relationship to the rate of increase of total retail sales in the country. It is nothing more than a projection of existing conditions. There is no recognition of the fact that the sales ratio of the durable-goods to total sales may have been less (or more) two years ago and that presumably there may be even greater (smaller) sales of the durable next year.

There are other economists, however, who realize that demand prediction is more complicated than merely projecting existing trends. As we shall show, in some instances they have tried to encompass their findings into formulae. In other cases they settle for pointing out the complexities, but even this is a form of progress compared with most of the simplistic ideas that have hitherto prevailed among Ministry of Trade officials.

One of the first factors that have been acknowledged is that differences in income affect one's ability to buy appliances. Thus, on the basis of budget studies that were conducted for this purpose, I. Sinetar found the relationships set forth in Table 14.1.

Absent from most calculations however was any consideration of how many families already owned a particular appliance. Few if any Russian economists bothered about such questions until about 1958,[25]

23. Karapetian et al., p. 146.
24. F. A. Krutikov and B. Solov'ev, in *Sovetskaia torgovlia*, 1969, no. 2, pp. 25–29.
25. Shvyrkov, p. 286.

Table 14.1. Expenditures on electrical appliances per capita as a function of family income

Yearly income per family member	*Expenditures for electrical appliances*
Up to 600 rubles	3.2 rubles
601 to 900 rubles	5.5
901 to 1200 rubles	8.
1201 to 1500 rubles	13.8
Over 1500 rubles	18.3

Source: I. Sinetar in *Sovetskaia torgovlia,* 1968, no. 12, p. 47. No date is given for the data.

primarily because few families were lucky enough to have any appliances until the late 1950's. The main obstacle to the increased sale of most appliances was not inadequate demand but inadequate production. Yet by the early 1960's, sales of some appliances began to drop. This stimulated interest in the question of the existing ownership of various durable goods, especially since there was little information to fall back on.[26] Except for some preliminary studies in 1958 and 1962, the first serious work on the home ownership of appliances was conducted only in 1965.[27] Nevertheless many economists continued to disregard or soft pedal the question of household inventories. Thus V. D. Gríbov draws up a model for simulating the demand for watch-repair service and includes three variables in his formula, where x_1 is the per capita retail sale of all goods, x_2 is the individual index of the price of watch-repair service, and x_3 is the general price index.[28] It is more than thirteen pages later before he acknowledges that recognition must be given to the stock of watches already in use before it can be determined what the need for repair service will be.[29]

Others take the matter more seriously but they are often handicapped by other factors which affect the usability of their figures. I. Sinetar, whose figures about income and appliance expenditure are the basis for Table 14.1, has included home ownership of refrigerators in his formula for predicting the future demand for such appliances. He suggests the multiple regression

$$Y = A - e^{a+bx+cz}$$
$$Y = a + bx + cx^2 + dz$$

where A is the maximum unit of ownership and refrigerators (or family

26. S. Kosiachenko, V. Rutgaizer, in *Voprosy ekonomiki,* 1969, no. 8, p. 157.
27. Shvyrkov, p. 286.
28. Shvyrkov, p. 102.
29. Shvyrkov, p. 114.

norm), Y is the percentage of population that owns a refrigerator, x is the income per capita, z is what he calls the structure (*sostav*) of the population, and a, b, c, and d, are parameters of the equation, e is the natural logarithm base.[30] But even though Sinetar recognizes some of the basic factors otherwise ignored by many of his colleagues, he still is unable to do much with his predictions because refrigerators are still in such short supply. (See also below, under Demand Estimation During Market Disequilibrium.) Sinetar himself estimates that in 1967 just for the Ukraine 550,000 refrigerators would have been bought if that many had been offered for sale. Unfortunately only 410,000 were made available. For 1968 he estimated that 760,000 could be sold; but only 520,000 were offered. Even with a somewhat sophisticated approach to the prediction of prospective sales, as long as such shortages persist the main determinant for predicting the sales of many appliances will continue to be the expected level of production rather than vice versa.

For other appliances that are not in as short supply, formulas such as Sinetar's have more meaning. Here, however, there are usually other

Table 14.2. Ownership of consumer durables by republic

	Size of retail sales per capita in 1965 rubles	*Sewing machines for 100 families (with 3 or more members)*	*Bicycles per 100 households*	*Wrist watches per 100 adults*
Estonia	635	82	73	75
Ukraine	404	56	50	63
Belorussia	355	84	59	57
Georgia	335	52	8	43
Uzbekistan	316	57	40	34

Source: A. Kh. Karapetian et al., eds., *Dokhody i pokupatel'skii spros naseleniia* (Moscow, 1968), p. 147.

complicating factors. First of all, as shown in Table 14.2, there are striking differences in the ownership of various appliances among the various republics. Some of the differences are explained by geography. In Georgia, for example, it is too hilly for bicycles. In addition, however, there appear to be cultural or regional differences which explain, for example, the large number of sewing machines in Belorussia in comparison with the other republics. This again encumbers the planning process, although it need not be an insurmountable problem—providing of course, the planners recognize differences such as these. Until recently there has often been a reluctance to acknowledge such factors.

30. Sinetar, p. 48.

A somewhat more sophisticated approach is offered by G. V. Voznesenskaia, who suggests the utilization of something like a queueing model.[31] She wants to be able to predict the consumer's order of priority for various consumer durables. This is important because repeat sales of particular consumer durables occur only many years later. Therefore it is risky to plan sales of other consumer durables on the basis of the sales records of a particular durable good. Yet if the planner is to assure an adequate supply of goods, he must know what the consumer has in mind once he builds up enough disposable income for something like a consumer durable.

Soviet planners have also come to recognize that with time and growing affluence it will not only be necessary to anticipate what kind of appliance a consumer will choose, but which brand and model of that appliance. As the consumer is offered a greater choice of appliances on the shelf, he brings into play considerations that are difficult to measure since they are subject to momentary change. Here again, until recently research on this subject in the USSR has not been of much help, because

Table 14.3. Reasons for not buying the intended good at the store (unfulfilled effective demand)

Items	*Item not available*	*Desired brand of item not available*	*Not sold on credit*	*Other*
Television sets	33.4%	14.8%	29.6%	22.2%
Radios and phonographs	16.7	16.7	16.6	50.
Refrigerators	78	0.	18	4.
Washing machines	61.4	3.5	28.1	7
Vacuum cleaners	33.3	0	0	66.7
Sewing machines	0	25	0	75

Source: V. V. Shvyrkov, ed., *Opyt primeneniia matematicheskikh metodov i EVM* . . . (Moscow, 1968), p. 290.

marketing people are only now beginning to see that such problems do exist. One of the first of such studies was made in 1965. A group of consumers was questioned about why they did not buy the particular good they had gone shopping for. The results obtained are shown in Table 14.3. For goods which were in abundant supply like sewing machines, radios, phonographs, and television sets, the unsatisfied buyers were not able to satisfy a particular brand preference and simply postponed their purchase or went elsewhere. In other cases, the appliance could not be bought for credit. For refrigerators and to a lesser extent washing machines, the main obstacle was that there were simply no goods for sale.

31. Karapetian et al., p. 137.

In a more detailed study, shoppers were questioned only about their purchases of television sets. In the GUM Department Store in May 1967, A. Kochurov and A. Nikolaeva reported that a large percentage of the white-collar customers buying a television set were purchasing their second set. This was particularly true of Moscovites, especially the wealthier ones, as opposed to buyers from out of town. Thus, as indicated in Table 14.4, of the purchasers of TV sets with incomes of 70 rubles or more, over 60 percent were Moscovites who were buying a replacement for an existing set. In fact about 71 percent of all the white-collar buyers interviewed had already bought a set some time ago. Naturally, under such circumstances, these buyers are going to be a bit more choosy about the kind of second set they buy. Thus out of 306 respondents, about 25 percent indicated they picked their set because of its external appearance, 29 percent chose theirs because of the size of the screen, 32 percent picked their set because of its overall workmanship. Only 5 percent based their decision on the price of the set.

Table 14.4. First time and repeat purchasers of television sets by white-collar workers

Per capita monthly family income	*First purchase:*		*Repeat purchase:*	
	Moscovites	*Out-of-towners*	*Moscovites*	*Out-of-towners*
30–50 rubles	13.3%	26.7%	26.7%	33.3%
50–70	15.4	25	44.2	15.4
Over 70	14.8	9.7	60.7	14.8
Overall average	14.8	13.7	55.5	16

Source: A. Kochurov and A. Nikolaeva, in *Sovetskaia torgovlia*, 1967, no. 12, p. 25.

These findings were supplemented in a larger study of 4200 television-set buyers conducted by L. Ostrovskii for the All-Union Scientific Institute of Business Cycle and Market Research.[32] He found that those who were buying a set with a 35-centimeter screen were primarily motivated by price and then reliability of operation. Those who were buying anything larger were first of all concerned about the size of the screen (that it should be larger than in their previous set) and then by the external appearance of the set. Least of all this second group was concerned about price. About a third of those interviewed were buying their second set, and in all cases they were buying a set with a larger screen than their previous one. Those interviewed indicated a marked preference or a marked distaste for certain brands. Thus most indicated a preference for the set labeled Record, with a 35-centimeter screen. Other sets that were

32. L. Ostrovskii, in *Sovetskaia torgovlia*, 1968, no. 3, p. 27.

favored were Chaika, Start 4, Rubin 106, and Avrora. Sets which were overstocked and which no one seemed to want were Belarus 110, Lira, Signal, and Rassvet.[33]

For the planner, such findings suggest a host of problems. For example, it is no longer sufficient to assume that the state will be able to produce and automatically sell a specified number of television sets. Clearly some sets will not be purchased, even as a last resort. Therefore today the planners must seek data that will permit them to take account of differences in demand for particular models and sets of different sizes. Furthermore, model changes will have an increasingly important effect on demand, as will questions of obsolescence and the age of the appliance. We have already noted the number of people who are making a repeat purchase. Thus it is necessary to project the number not only of first-time buyers but also of replacement buyers. Sinetar in his study (p. 48) takes cognizance of this and for 1968 estimated that 8,000 refrigerators would be

Table 14.5. Operational life of Soviet appliances

Appliance	*Years*
Bicycle	10
Radio and phonograph	10
Television	10
Camera	15
Motorcycle	7
Wrist watch	7
Motor scooter	15
Refrigerator	15
Washing machine	10
Sewing machine	20
Vacuum cleaner	10

Source: V. I. Gogol' and G. L. Trakhtenberg, *Pokupatel'skii spros i proizvodstvo* (Moscow, 1965), p. 143.

bought in the Ukraine as replacements for existing units. By 1970, he anticipated the figure would rise to 21,000.[34]

Trends of this sort make it necessary for the planner to calculate the operational life of various appliances and the age of existing stocks. V. I. Gogol and G. L. Trakhtenberg provide an estimate of the operational life of various appliances (Table 14.5). As might be expected, this is at best an arbitrary calculation, especially given the poor quality of Soviet goods. Thus V. A. Rumiantsev estimates that television sets have a life of 8 to 10 years and that sewing machines have a life of 10 to 20

33. B. I. Gogol' and G. L. Trakhtenberg, *Pokupatel'skii spros i proizvodstvo* (Moscow, 1965), p. 167.

34. I. Sinetar, *Sovetskaia torgovlia*, 1968, no. 12, p. 48.

years. On occasion he reports that some sewing machines last as long as 50 years (prerevolutionary!). There is a question as to how meaningful such figures are because whether an appliance has a life of 10 or 20 years obviously makes a significant difference for anyone who is attempting to determine replacement demand.

Presumably if all that a planner has to do is calculate the new buyers and those replacing existing sets, he will not have an especially difficult task. But we have seen that many buyers are not waiting out the full life span of their appliance. In the case of television sets, they were upgrading their set with their purchase, either because they wanted a wider screen or because they wanted what they considered to be a better model. Relating this finding to the one of Krutikov reported earlier, we glimpse a partial explanation of why various second-hand, nonfood goods are offered for sale in the kolhoz markets.[35] Krutikov noted that such sales were especially heavy after a big model change.

The study by Ostrovskii revealed, however, that not every buyer of a new television set sold or gave away the old set.[36] Eighteen percent of those questioned indicated that they would continue to use their original set. In other words, each was becoming a two set family. (Vladimir Treml suggests that this may be the way the Russian consumer protects himself. He is able to use his second set while his first set waits to be repaired—an average of four months a year in the repair shop.) This is a new challenge for the planners. It is not enough to anticipate the number of buyers entering the market for the first time. Nor can it be assumed that the second buyers will scrap or pass their sets on to other users.

The potential impact of these various developments on sales is illustrated in the sale of sewing machines. I. I. Korzhenevskii has taken sales and stock figures of sewing machines for a specific oblast'. The sewing machine is a product that has gone through all the stages of economic life in the Soviet Union. At one time its sales were limited by inadequate production. Then as supply rose to satisfy demand, sales fell off, although periodically there would be a temporary spurt in sales. Now, however, sales are a function of new family formation and model change rather than mere satisfaction of a voracious and neglected consuming populace. This has become an especially serious problem as more and more Soviet consumers develop a preference for ready-to-wear clothing and as the Soviet textile industry moves to satisfy this demand with clothing of better quality and style. Thus, as Table 14.6 indicates, sewing machine sales reached their peak in this particular oblast' in 1962 and were not expected to reach 1962 levels even by 1966. More-

35. Krutikov, *Kon'iunktura rynka pri sotsializme*, p. 33.
36. Ostrovskii, p. 27.

Table 14.6. Fall in sales of sewing machines and the number of households owning them in a Russian oblast'

Year	*Sales*	*Number of families in oblast'*	*Families with sewing machines*	*Percent of families with sewing machines*
1962	16,000	490,000	255,000	52%
1963	10,000	496,000	263,000	53.1
1964	14,000	502,000	275,000	54.7
1965 (expected)	15,000	509,000	288,000	56.6
1966 (plan)	13,200	515,000	299,200	58.1

Source: I. I. Korzhenevskii, *Osnovnye zakonomernosti razvitiia sprosa v SSSR* (Moscow, 1965), p. 134.

over, sewing machines were being scrapped at an increasing rate. Although 10,000 machines were sold in 1963, only 8,000 more (or 80 percent of those sold) were added to the stock, and only 6,000 more families obtained them. This meant that only 60 percent of the sewing machines sold went to new families. By 1965, of the 15,000 machines that it was anticipated would be sold, 12,000 would be added to the stock (same ratio of 80 percent), but only 7,000 more families (a fall to 47 percent) would add them to their furnishings.[37] This apparently indicates a trend toward two-sewing-machine families. In any case, the tasks of the planner are made more complex. Because of the failure to anticipate the pile-up of sewing machines, the inventory of sewing machines in state warehouses was twice as large as the specified norm in early 1966. This finally led to a cutback in production and a shutdown of the sewing-machine production lines in five out of the six factories in the country that made sewing machines.[38]

Estimating Consumption from Savings, Transfers, and Income Distribution

So far the discussion about obtaining better estimates of consumption has focused on consumption expenditures. Nothing has been said about saving. Certainly consumption patterns are very much affected by the propensity to save and the marginal propensity to save. Soviet data leave much to be desired in this area also.

Those who need information about savings by Soviet consumers have to settle for information about changes of deposits in the state savings banks and of savings-bond purchases. These are the only figures published, and a look at the *Plan of Statistical Work* suggests that these are

37. I. I. Korzhenevskii, *Osnovnye zakonomernosti razvitiia sprosa v SSSR* (Moscow, 1965), p. 134.

38. V. Bredov and A. Levin, in *Voprosy ekonomiki*, 1968, no. 7, p. 55.

indeed the only figures compiled systematically.[39] In normal times there is not much reason to suspect that these figures are atypical of the overall savings pattern. Yet there are indications that in times of tension or inflation, the Soviet citizen does not put all of his savings in the bank. This was apparently the case before the Currency Reform of 1947, when it was widely agreed that the peasants kept their money in their mattresses. There was widespread fear that embarrassing questions would be asked about how such large sums could be earned legitimately if they were publicly displayed at the state savings banks.

Related to the question of savings and their impact on budget studies is the question about transfer payments between private citizens. Similar complications arise when wage earners do their shopping or gift giving outside their home towns. As noted by the Polish economist V. Velfe, the Russians make no effort to make available such data.[40] This omission leads to misinformation about transfers within and between families, but it also conceals the consequences of the peasants' moving to the city in order to buy goods.[41] The importance of this movement can be gauged by the fact that in 1958 in Moscow 40 percent of all TV purchases made were made by out-of-towners.[42] The lack of such information makes it difficult to formulate meaningful statements about individual expenditure patterns and to make sound plans for the distribution of goods by regions.[43]

An equally important obstacle to planning consumption is the absence of regularly prepared and carefully collected data which would show the distribution of income among the Soviet population. At first glance the lack of such information in the Soviet Union may come as a surprise. It goes without saying that exact information of this nature is difficult to obtain in all societies. Yet in a society which is as closely controlled and regulated as the USSR, one would think that information about income distribution could be routinely collected by TsSU and readily made available to Soviet planners. This is not the case.[44]

The information about income distribution that is available apparently is derived from various sample surveys. Income information is collected as part of the yearly budget surveys mentioned earlier, but this informa-

39. TsSU, *Plan statisticheskikh rabot*, p. 243, and A. Kh. Karapetian, ed., *Statisticheskie i matematicheskie metody v izuchenii problem narodnogo potrebleniia* (Erevan, 1964), p. 17.

40. Karapetian, p. 17.

41. *Ekonomicheskaia gazeta*, 1967, no. 48, p. 15.

42. I. Khrekin, *Pokupatel'naia sposobnost' naseleniia i tovarooborot* (Moscow, 1958), p. 20.

43. V. Tokhadze, in *Sovetskaia torgovlia*, 1968, no. 11, p. 10.

44. F. G. Gurvich, in *Ekonomika i matematicheskie metody* 3, no. 6: 942; Rimashevskaia, p. 43; and N. Druzhinin, in *Sovetskaia torgovlia*, 1967, no. 7, p. 30.

tion apparently is not released publicly. One income survey that has been made available covers only 200 families.[45] This sample material has been collected regularly since 1956. Periodically other studies have been made but these too seem limited in their coverage so that generally seldom more than 900 families are included.[46] There is general agreement among those who take note of this lacuna that this is a severe handicap for planners who want to make any projections about demand.

Although some of the statistical shortcomings mentioned above have been of the Russians' own creation, most of them are common to all economies. Almost all surveys, samples, and models leave something to be desired. Still, the Russians sometimes take themselves too seriously. In the late 1940's and 1950's many Soviet economists enjoyed boasting about their survey procedures and their use of large samples. This, asserted authorities such as Mikoyan, Sapel'nikov, Shirlin and Levin, along with the careful analysis of sales data, assured the planned nature of the Soviet distribution system.[47]

Knowing what we do about the nature of demand estimation, we had every reason then to be skeptical of such claims. Now there is additional reason. Starovskii, the director of TsSU, inadvertently revealed that almost all of the past work with budget studies was of no practical significance in actual plan preparation. In a *mea culpa* article in 1967, Starovskii openly acknowledged the existence of many of the shortcomings in the budget studies which have just been cited.[48] But he minimizes their importance in a peculiar way. Twenty years ago such shortcomings were unimportant, he says, because the whole exercise was strictly academic in nature. In other words, it really didn't matter whether studies were valid or not since the planners didn't use them anyway (Mikoyan's and Sapel'nikov's, Shirlin's and Levin's comments notwithstanding). But times have changed. Now Starovskii agrees that these budget studies are necessary for the proper operation of a planned economy, and therefore he concedes that improvements must be made. Toward this end an attempt was made to improve budget study methods in 1966.

Starovskii's comments are all the more remarkable when it is remem-

45. Rimashevskaia, p. 25.

46. D. Stadukhin and M. Khaverson, in *Ekonomicheskie nauki,* 1967, no. 12, p. 28; Rimashevskaia, p. 68; V. I. Raitsin, *Planning the Standard of Living According to Consumption Norms* (White Plains, N.Y.: International Arts and Sciences Press, 1968), pp. 35–40; and Marshall I. Goldman, "The Reluctant Consumer and Economic Fluctuations in the Soviet Union," *Journal of Political Economy* 8 (1965): 368.

47. A. I. Mikoyan, *Measures for the Further Expansion of Trade and for Improving the Organization of State, Cooperative, and Collective Farm Trade* (Moscow: Foreign Languages Publishing House, 1954), p. 19; Ia. Sapel'nikov, Iu. Shirlin, and A. Levin, in *Sovetskaia torgovlia,* 1959, no. 7, p. 28.

48. Starovskii, p. 22.

bered that for a long time, independent budget studies of consumption were virtually prohibited in the USSR. Apparently someone decided that such information should be classified, since it might prove to be embarrassing. As a result, research work was halted and any information that was gathered was locked up—not only from foreigners but from Soviet scholars and oddly enough even from Soviet planners. This makes the comments of Sapel'nikov and his colleagues about the reliance of Soviet planners on budget studies all the more depressing.

Prior to the decision to prohibit budget studies, numerous surveys were conducted in the years 1922–30.[49] One study was apparently made as late as 1934. Then for approximately twenty years there was virtual silence. TsSU continued to carry on some studies in 1932, 1938, and 1940, but these were not made available to the people in the Ministry of Trade.[50] Gradually, however, in the mid-1950's, scattered surveys were undertaken on an uncoordinated basis. The Planning Administration in the Ministry of Trade apparently made the first breakthrough in 1954, a year after Stalin's death.[51] (One report suggests that work was done as early as 1951, but there is some vagueness about this.)[52] It was only in 1956 that more systematic and rigorous studies were undertaken.[53] Still the only studies that seem to have provided any solid information were the massive surveys conducted in 1958 and 1967. These two studies seem to be the sole source of almost all the studies of spending patterns, elasticity, and even income that are available.

Conceivably planning was not seriously affected by the absence of consumption studies prior to the late 1950's. Until that time, there was such a shortage of goods relative to the needs and purchasing power of the population that virtually anything that was produced was sold. The shelves were emptied as soon as they were filled. For the theorists, however, the decision to ban budget studies did have a serious effect on their work. On occasion the effect was morbid. Sometimes their work was forgotten, and sometimes they themselves were forgotten. It is eerie to read about the various studies that were made prior to the 1930's and see references to theoreticians like Konius from 1926, only to find that this budget-study work dropped from print to reappear

49. Rimashevskaia, p. 46; T. V. Riabushkin, ed., *Metodologicheskie voprosy statistiki truda* (Moscow, 1967), p. 200. Raitsin says budget studies for the purpose of setting minimum wages were conducted until 1927 (Raitsin, p. 3).

50. Ezhov, p. 25.

51. Krutikov, *Kon'iunktura rynka pri sotsializme*, p. 69.

52. Ezhov, p. 425; Riabushkin, *Metodologicheskie voprosy statistiki truda*, p. 206.

53. Raitsin, p. 4; Rimashevskaia, p. 46.

only in 1953.[54] And of course, Konius was lucky. Some of his colleagues of the late 1920's would never appear in print again.[55]

No doubt the Soviet statistical system has important advantages in that the Soviet statistician can order the compilation of any statistic that he deems necessary. This is something that a centralized system with state ownership can do that a decentralized system of private ownership cannot. But as evidenced by the experiences of Soviet statisticians in the Stalinist period of the 1930's, 1940's, and early 1950's, one man or group can decide that a certain set of statistics is valueless or possibly subversive and all publication and sometimes even collection is terminated. Thus the advantages of centralized and highly coordinated collection of data must always be weighed against the dangers of some serious failings.

Estimating Consumption from Sales Statistics

Inadequate as Soviet budget studies are for predicting consumption trends, sales statistics do not necessarily yield any better results. This applies whether one studies the global figure of total retail sales or sales indices of individual products.

The main problem is that the reported retail-sales figure does not refer exclusively to retail sales. Included in retail sales are goods sold to the *melkii opt* network. The *melkii opt* network involves the sale of consumer goods to small institutions, enterprises, and collective farms.[56] In some cases the purchase may be diverted to industrial use. On occasion the *melkii opt* operates as a small wholesaler. Thus there is a tendency to overstate retail sales. V. Bredov and A. Levin claim that sometimes there can be considerable distortion because some of the items included in the *melkii opt* trade constitute a considerable portion of the total quantity of goods sold. This, they claim, makes it very hazardous to use retail sales figures for predicting consumption trends.

What makes the *melkii opt* operation particularly difficult to handle is that no one seems to know just what percentages of various goods are sold this way. L. A. Levkova and L. F. Tikhova estimate that 5 to 7 percent of the sales volume of most goods sold is diverted into the *melkii opt* network and does not reach the consumer.[57] This amounts to $7 billion to $10 billion worth of goods a year—no small amount. Com-

54. L. E. Mints and L. S. Kuchaev, eds., *Statisticheskoe izuchenie sprosa i potrebleniia* (Moscow, 1966), pp. 182, 188.

55. Konius actually had at least one article printed in 1949, but it was about index numbers of cost rather than consumption (ibid., p. 179).

56. Bredov and Levin, p. 66.

57. Shvyrkov, p. 351; N. Titel'baum, *Sovetskaia torgovlia,* 1961, no. 10, p. 51.

plicating this even more is the fact that the definition of what is included as retail sales is subject to periodic change. Sometimes the change is due to the redefinition of existing concepts and sometimes it is due to mergers or administrative and operational reorganizations.[58] In either case, this shifting of definitions makes it difficult to maintain any kind of statistical consistency.

Equally disruptive is the inadequate coverage of kolkhoz market sales. Some of the shortcomings have already been mentioned in our discussion of budget studies. Here too it is important to know how much is involved, not only in the formal exchanges on the kolkhoz markets (which in itself is difficult to ascertain) but also in the informal exchanges that take place between urban residents who have their own backyard gardens.[59] Levkova and Tikhova have attempted to estimate the discrepancy between the figures published as government and cooperative sales volume for certain items and the actual consumption of those items.[60] They estimate that the data are understated on certain goods by the following amounts:

Meat	Off 51%	Potatoes	Off 47%
Sausage	37	Fish	8
Bread	55	Sugar	2

At best this makes the retail sales figures an uncertain measure to work with.

Another complaint about Soviet statistical definitions of retail sales is that often the definitions are too broad to be helpful. T. M. Kuznetsova specifically mentions the category *shveinye tovary*.[61] Perhaps the best translation of this is ready-to-wear clothing. Unfortunately *shveinye tovary* cover a multitude of categories. This makes the term simply too broad for the planners and factory managers to work with. Kuznetsova wants a more precise breakdown into such items as men's suits, women's dresses, etc.

Estimating Consumption from Services Statistics

Attempts to measure and predict consumption through retail sales figures are affected by yet another basic flaw, the absence of data about service expenditures.[62] Unfortunately until recently most Soviet economists have not even been cognizant of the problem. This oversight can

58. Titel'baum, p. 50; Naum Jasny, *The Soviet 1956 Statistical Handbook: A Commentary* (East Lansing, Mich.: Michigan State Univ. Press, 1957), p. 178.
59. Shvyrkov, p. 345.
60. Ibid., p. 351.
61. Ibid., p. 8.
62. Kosiachenko and Rutgaizer, pp. 155, 157.

probably be traced to various ideological obstacles which made services a suspect concept in Marxist thought. From what we can observe about different societies, however, as per capita income rises, the consumption of services becomes an increasingly important part of life. The Soviet Union is not immune to these tendencies.

Recently one or two Soviet economists have recognized the foolishness of past policy. Ia. Kvasha and V. Krasovskii have pointed out that services provided by passenger transportation and communication are not counted as part of the national income and social product.[63] This leads to a growing understatement of the country's national income. The gap tends to become greater with time as the relative role of services increases. For instance, they foresee that with time such services as automobile repair, tourism, etc., will grow rapidly. Even more important, it is not just that the true growth of national income is distorted, but that the omission of such indicators from the basic statistical series results in the continued underemphasis of such services in the planner's designs for the future. As Kvasha and Krasovskii have stated, "All attention is focused on the production of traditional consumer goods; moreover, this production is frequently on a scale lower than that indicated by the budget level reached by the population. On the other hand the new needs that have appeared are ignored."[64]

The paucity of services in the USSR is a case where planner's preferences may be as much a product of statistical ignorance as of economic rationalization or judicious decision making. Even though Soviet budget studies ask about the utilization of services, apparently only two other statistical reports on the provision of services are tabulated by TsSU.[65] Under the circumstances, even if they decided to provide more services, it seems as if the planners would be hard put to determine just what new services might be needed and what currently are provided.[66]

In past years, planner preferences have led to serious enough distortion in such macro determinations as the switch from coal to gas and oil. The danger of similar miscalculations is all the greater in something like the provision of services, which tends to be more a function of micro choices and decision making. We know from official as well as unofficial

63. Ia. Kvasha and V. Krasovskii, in *Voprosy ekonomiki,* 1968, no. 4, p. 72.

64. Ibid. Iudenich and Sonatov, however, talk about drawing up plans for the provision of services. N. V. Iudenich, I. S. Sonatov, *Statistika bytovogo obsluzhivaniia naseleniia* (Moscow, 1968), p. 44. But such suggestions seem to be the exception rather than the general case.

65. Kosiachenko and Rutgaizer, p. 157; TsSU, *Plan statisticheskikh rabot,* p. 241.

66. Even with private although regulated ownership of service operations, there is no guarantee that services will be adequate. This is well illustrated by the shortcomings of American Telephone and Telegraph Co. in New York City as well as New York's Long Island Railroad and its Consolidated Edison Co.

statements and complaints that such miscalculations are already a serious problem.[67] Even with the proper statistics and their proper use, it is difficult to provide adequate services; without proper statistics, it seems unlikely that the ever-increasing demand for more services can be adequately provided in a system of state ownership.

In a fascinating article, Kosiachenko and Rutgaizer suggest another obstacle to measuring and predicting services. At present, they say, no effort is made to measure services performed by *chastnikov*, private entrepreneurs. They estimate that such businessmen already make half of all the repairs on shoes, clothes, and appliances in the urban areas of the USSR.[68] As the Russians expand the production of automobiles, the need for such private services should expand greatly.[69]

Estimating Consumption and Price Statistics

An accurate record of the prices charged and the changes in those prices is as important as the correct measurement of the actual goods and services sold to the consumer. TsSU does not even bother with an all-union price index for services. V. D. Gribov reports that some republics have been collecting their own price data for services, but only since 1960–65.[70] He finds that even these indices are of limited use.

Although TsSU does collect price indices for goods sold, there are some Russian economists who question the overall meaningfulness of such efforts. Again, the candid Kvasha and Krasovskii raise some basic problems. Although their questions pertain primarily to the price index for machine tools, the ramifications of their questions certainly extend to the price indices for consumer goods. They find that the official index of wholesale industrial prices for machine-building and metalworking falls continuously from 1949 to 1965 with the exception of a slight increase in 1960.[71] This finding, they say, conflicts with the actual transfer price of machinery, which they claim has risen noticeably over the same period of time. As they explain it, what happens is that manufacturers make some minor modification in their production model; then they claim that they are producing an improved and new model which warrants an increase in price. Usually the model is neither new nor improved. Generally it is only the higher price that is different. As Kvasha and Krasovskii put it, the change is made purely so that the manufacturer can "avoid the established price lists," which nonetheless continue to serve as the

67. *Soviet News*, 22 July 1969, p. 39; *Ekonomicheskaia gazeta*, 1968, no. 42; and *Sovetskaia torgovlia*, 18 July 1967, p. 2.

68. Kosiachenko and Rutgaizer, p. 156.

69. Marshall I. Goldman, "Trade and the Consumer," *Survey* 64 (July 1967): 141.

70. Shvyrkov, p. 115.

71. Kvasha and Krasovskii, p. 77.

basis for the official price index. Similar complaints are often heard about such manipulations by the producers of consumer goods.[72] Obviously this is a fundamental question, and if Kvasha and Krasovskii's arguments are at all valid, it calls into question the usefulness of all Soviet price indices.[73]

Quality of Goods and Other Problems

In addition to the shortcomings which directly affect the use of budget studies and retail-sales statistics, there are others which should be considered if we are to have a reasonably complete picture of the hazards that face Soviet economists and statisticians who want to measure or predict demand trends.

One of the most troublesome factors is the quality of Soviet goods. This is of vital importance in the field of consumption. Complaining about poor quality in the USSR does not mean that other societies are free of the problem. Certainly each of us has an unfavorite story about personal experience with poor quality in the United States. Nevertheless the problem in the USSR seems to be unique in the degree to which products of poor quality pervade Soviet society. It may very well be a case where the magnitude of the problem is such that the quantitative differences verge on becoming qualitative differences.[74] Should this be the case, the index of consumer-goods sales and production may tell us nothing at all when measured against a background of foreign comparisons.

The issue raised by the question of quality may extend beyond issues raised in the usual discussions of index numbers. Again this seems especially important in a consideration of consumption, where quality and service are of first importance. The factor of quality may even go a long way toward explaining why it is that while Soviet and some Western figures sometimes show the Soviet standard of living to be close to that of some West European countries, the intuitive feeling is that the Russians in fact lag far behind.

Certainly such problems are not absent in the field of heavy industry, but they seem more important here. For example sales and production of washing machines have risen dramatically in the USSR. Even if allowance is made for the fact that in its stock of such goods the Soviet Union lags far behind the United States, the output levels in the two countries

72. *Sovetskaia torgovlia,* 14 Jan. 1965, p. 3.

73. This question, as well as many others, was raised by Gregory Grossman in his pioneer study of Soviet statistics. See Gregory Grossman, *Soviet Statistics of Physical Output of Industrial Commodities* (Princeton, N.J.: Princeton Univ. Press, 1960), p. 64.

74. Of 8 million items inspected in the first half of 1963, the trade inspector for the RSFSR reported that 44 percent were of poor quality. See *Ekonomicheskaia gazeta,* 5 Oct. 1963, p. 8; and Grossman, pp. 65–66.

are not much different these days. The U.S. produced 5.1 million washing machines in 1968 and the Soviet Union produced 4.7 million.[75] Yet the comparison is not as close as it first appears; most of the washing machines sold in the USSR are of the hand-wringer type, while only a few of the hand-wringer type are sold in the United States.[76] In other words, a comparison of sales of washing machines in the two countries is misleading. The same thing would hold for refrigerators. A large number produced in the U.S. are self-defrosting. There may be self-defrosting refrigerators in the USSR, but they were not designed that way.

Another factor affecting quality of consumption is the state of the infrastructure. With increasing urbanization, this is becoming a consideration in other societies. There are some aspects of matter, however, which seem to be peculiar to the Soviet Union. Among such considerations is the question of communal apartments, which were so common until recently. According to city planners in Moscow, until thirteen years ago 70 percent of Moscow's residents shared kitchens and bathrooms with other families. In 1969, the number still was as high as 30 percent.[77] Of continuing importance is the fact that most Russian homes seem to lack what are usually regarded as the basic amenities of life in developed countries. Thus in a candid revelation, V. G. Kriazhev quotes the 1960 Russian housing census for the RSFSR which indicated that 62 percent of all urban housing units (*gorodskogo zhilogo fonda*) lacked running water. Sixty-five percent were not serviced by sewers and 80 percent had neither bath nor shower.[78] From personal experience the situation in Russian rural areas is even worse. Inevitably the question arises of how meaningful some of the Soviet consumption data are when there is no way of discounting for the fact that more than half of Russian urban housewives have to go to the communal pump with a yoke and two pails over their shoulders. (This is what exists even one block behind the main tourist hotel in central Kharkov. Kharkov is the fifth largest city in the USSR.) It is almost the only way to obtain water in the countryside.

The problem of quality is so serious that it brings to mind the question raised by Walter Heller in one of his Godkin Lectures at Harvard in 1966. He argued that our estimate of GNP was overstated to the extent that we neglected to subtract, for example, the costs of air and water pollution that were incurred as a result of producing the GNP. In much the same

75. *Merchandising Week*, 24 Feb. 1969, p. 37; *Soviet News*, 11 Feb. 1969, p. 55.
76. Gogol' and Trakhtenberg, p. 169.
77. *Wall Street Journal*, 14 Aug. 1969, p. 1.
78. Conditions do not appear much better in Japan. In Tokyo, only 36 percent of the homes had flush toilets, about the same percentage as in the urban areas of the RSFSR as a whole. *New York Times*, 9 Aug. 1969, p. 3; V. G. Kriazhev, *Vnerabochee vremia i sfera obsluzhivaniia* (Moscow, 1966), p. 130.

way, it might be appropriate to reduce Soviet GNP and consumption data by an amount representing the poor quality of Soviet goods. Perhaps deductions of a similar nature should be made in the GNP of other countries as well. Here, too, however, the magnitude of the problem in the Soviet Union seems to make the Russian situation unique among the developed countries.[79]

Perhaps it would be appropriate at this point to say a word about the inadequate state of housing in the Soviet Union. A more detailed study of this seems to belong in a study of real income. Housing, however, has an impact on goods consumption in that the small size of apartments puts a limit on the quantity and the size of consumer goods that can be used comfortably in them. For the planners, this is another factor that would have to be considered in any model of future consumption.

Poor Use of Data: Its Causes and Effects

In addition to the problems which arise because of the use of *poor* data, there are other difficulties which stem from the inadequate or unsophisticated use of what is sometimes *good* data. Some of these difficulties spring from the peculiar nature of the Soviet economic system and its tendency to emphasize concepts that are not always the most rational.

Demand Estimation During Market Disequilibrium

To the extent that a particular good is in short supply and Gosplan decides to increase production at a certain percentage rate, it is a fairly simple thing for planners in the Ministry of Trade to project sales increases of the same percentage. The minute, however, that supply no longer lags so far behind the demand for a product, the situation becomes much more complex. Evidence about such faulty predictions is sometimes publicly acknowledged and sometimes it can be conjectured.[80]

One of the best general surveys of how difficult it is for the Russians to plan their sales when there is no basic equilibrium in the market is given by F. A. Krutikov in his book with the provocative title, *Fluctuations of the Market Under Socialism*.[81] He discusses the inventory surplus in nonfood goods that coincided with a shortage of food goods in 1964–65 and then goes on to show how an increase in wages and the

79. For those who would class the USSR as a developing country, the problem of quality would not be so different from the extent of the problem faced by other countries in this particular category.

80. Goldman, "The Reluctant Consumer," p. 378.

81. Krutikov, *Kon'iunktura rynka pri sotsializme*.

harvest in 1965–66 brought about exactly the reverse kind of situation.[82] V. V. Shvyrkov also shows how the plan for sales of something with as stable a demand as sugar, butter, vegetable oil, and margarine can be off as much as 14 percent. This happened in 1966. Simultaneously the sale of meat products, eggs, vegetables, ready-to-wear goods, and leather shoes was 13 percent more than planned. The total miscalculation amounted to more than $2 billion.

If demand prediction is difficult enough in a situation where the demand for goods is relatively stable and where the supply of goods is adequate at existing prices, it is even more of a challenge where the demand situation is abnormal. How meaningful is the whole analysis of consumption if there are large pockets of unsatisfied demand? Furthermore, what economic significance does a particular price have when there are no goods available for sale at that or any other price? Granted that this happens occasionally in all societies, it is a frequent occurrence in Soviet-type economies. This casts doubt on the whole concept of price as an expression of an equilibrium between supply and demand. To the extent that prices are devoid of meaning and to the extent that there are large numbers of goods in extremely short supply or available only in erratic fashion, future projections become nothing more than educated guesses.

Western businessmen also make estimates of the potential market for a product, but usually such estimates are also based on house-to-house surveys. Even then, such market surveys are regarded as estimates, not as exact measures. In the USSR such estimates are usually not the result of home surveys but of estimates from the individual stores and factories.[83] The problem here is that one shopper may go to several stores searching in vain for a refrigerator. Conceivably this may show up as a demand for seven refrigerators. Some Soviet economists have finally recognized that as long as such conditions exist, it will be impossible to predict overall demand in the future with any precision.[84]

Despite these pitfalls, there are some demand estimates that have been relatively successful. For instance, V. A. Rumiantsev predicted that one million television sets would be sold in the second quarter of 1965 and in fact 1,077,000 were sold.[85] This may be coincidence, it may be luck, it may be a question of rounding off, but in any case it is a remarkably good result.

A more fundamental defect in consumption planning in the USSR stems from the secrecy that exists even in such a nonmilitary field as private consumption. A persistent complaint of many Soviet economists

82. Ibid., pp. 25–27.
83. N. Podgornaia, in *Sovetskaia torgovlia*, 1968, no. 12, p. 14.
84. *Sovetskaia torgovlia*, 21 Sept. 1968, p. 3.
85. Shvyrkov, p. 289.

is that they are not allowed to utilize or even see much of the basic information that is necessary for effective planning. In some cases, as we have seen, this is because such data are not collected by anyone. In other cases the data are collected but are then sealed in the safe by TsSU. At the same time, much of the data that is available is not utilized by the actual planners in the Ministry of Trade and the trade organizations.[86] Many planners do their work blissfully avoiding anything resembling sophisticated analysis. In some cases, they operate in this way because normal equilibrium conditions do not exist and so the statistical data do not have much relevance to future planning. In other cases, much of the material is too complex for the average planner to understand. As one authority put it, much of the data collected and the analyses suggested are too esoteric. They have no meaning for the actual planner. In a crushing comparison, he complains that most of the work done on market research has as much relevance to the real world as most doctoral dissertations.[87]

Regardless of these obstacles, more and more Soviet economists are attempting to predict future consumption. We have already seen some of the models that have been proposed. Increasingly greater recognition is being given Western work in the field. References are found to Tintner, Wold, and Stone. Regression formulas are suggested, but often the formulation seems too simple. Thus S. I. Soldatkin suggests a dynamic one-factor model for predicting the sale of watches.[88] His one factor is price change. However some other authors in the same collection of articles, e.g., Rumiantsev, do offer more sophisticated models.[89]

One hopeful sign is the emergence of a debate among Soviet economists about the relative merits of their various theoretical approaches to demand estimation. Thus Lakhman and Frenkel take Shvyrkov to task because of what they say are his inadequate statistics.[90] Lakhman and Frenkel also argue that much vital data, such as kolkhoz market sales, are omitted in Shvyrkov's estimates.[91] Similarly, they charge that he ignores the role of savings. Other Soviet economists have criticized the work of researchers such as Korzhenevskii for daring to suggest that different social and economic classes have different consumption preferences.[92] However if there is ever to be a substantial improvement in demand estimation and consumption projects, hopefully it will emerge from such debates.

86. Gogol' and Trakhtenberg, p. 77; Shvyrkov, p. 26.
87. *Sovetskaia torgovlia*, 21 Sept. 1968, p. 3.
88. Shvyrkov, p. 118.
89. Shvyrkov, p. 289.
90. Karapetian et al., p. 103.
91. Ibid., p. 104.
92. Sapel'nikov et al., p. 28.

The Generation of Misleading Data

No matter how critical the theoreticians become of each other, the nature of the Soviet economic system is such that it frequently generates the wrong kind of information. The phenomenon exists, but to a lesser extent, in all societies.

Like any manager, the Soviet manager is interested in reducing his costs of distribution. The greater the reduction, the greater the accolade and the bonus. Therefore there is enormous pressure on Soviet managers to generate figures showing a reduction in the costs of distribution. Managers in the West seek the same goals and recognition. But by contrast, in the Soviet Union, the desire for lower costs of distribution is not offset by the countervailing pressure of competition. In the West, this pressure usually causes an increase in service and an increase in the costs of distribution. This kind of force and counterforce in the West usually (not always, says Ralph Nader) tends to prevent excessive abuse of the consumer. (You don't have to believe in the invisible hand to like competition.) The absence of meaningful competition among distributors in the Soviet Union means, however, that there is no offsetting pressure to improve services. As a result, there is nothing to restrain store managers as they strive to slash costs of distribution. To the extent that the reduced costs are due to a curtailment of services and not just heightened efficiency, the consumer often finds that he is the ultimate loser. He ends up without the service which many times may not seem worth the saving. In effect the consumer, not the Soviet store, has to bear the cost.

One of the best illustrations of this misappropriation of costs is the readiness of Soviet officials to make the Soviet consumer stand in line. Since time is money, even for Soviet citizens, this means the Soviet customer bears the expense of standing in line. By this expedient, the Russians are able to hold down the number of stores and thereby their costs, and there is usually nobody to complain of higher costs incurred by the consumer as a result. Since the state has a monopoly over all sales, there is no need to fear that the consumer will take his business elsewhere. Therefore the temptation to slash costs of distribution to the bone is a hard one to resist. In fact the system of state monopoly fosters just such pressures.

As an indication of the depth of the problem, sporadic surveys suggest that the average housewife in the USSR spends about 6 hours a week shopping.[93] Five of those hours are spent in shopping for food items. Her husband spends approximately 3 to 4½ hours shopping for both food and

93. V. A. Artemov, V. I. Bolgov, O. V. Vol'skaia, L. S. Kolobov, A. G. Pusel, A. I. Sidliarenko, and O. N. Ianitskii, *Statistika biudzhetov vremeni trudiashchikhsia* (Moscow, 1967), p. 45; Kriazhev, pp. 101, 111.

nonfood goods. For the family as a whole this means that more than an hour a day is spent shopping. Ia. Orlov estimates that the Soviet population devotes 30 billion hours a year to shopping.[94] He estimates that $^4/_5$ or $^5/_6$ of this is spent unnecessarily because of the need to stand in line or because the consumer has to try several stores before he can find a store that stocks the product he is looking for. This is to be expected, since the drive to hold down costs of distribution not only tempts the marketing people to hold back on the number of stores that are opened but on the quantity of goods and assortment of items that are made available for sale. The smaller the quantity of the goods and the narrower the assortment, the lower the distribution costs. Yevsei Liberman ascribes this phenomenon to a desire to prevent excess capacity.[95] If there is no excess inventory, then there is no extra production or storage expense. Of course this merely means the burden is transferred to the consumer, who must waste his time in line or run elsewhere or do without. Liberman argues that for the economy as a whole, this is a net loss. As long as the state has a monopoly and it continues to emphasize reduced costs of distribution, the results will be misleading and there will be economic distortions.

Exactly the same pressures help to explain the inadequate provision of services. Just as costs of operation can be held down by limiting the number of stores and the amount of goods, so they can be held down by neglecting to offer the consumer more service. To the extent that the consumer must prepare more of her meals from scratch, the cheaper the explicit costs will be to the state. Similarly the fewer barbers there are, the more assurance there will be that the existing barbers will have to work at full capacity and higher productivity. Again, no value is placed on the time the customer spends waiting.

The use of the concept of *rabochee mesto* (worker's counter space) is another illustration of how the improper use of statistical indicators creates undesired results. Soviet stores are generally measured by the number of worker's spaces they have. In a self-service system, the concept of worker's space has no meaning. Nonetheless the concept is still being used by the Ministry of Trade even for self-service stores. To some extent, this outmoded concept contributes to the resistance of some planners to the introduction of self-service because they continue to stress counter space, not open shelves. Of course the greatest obstacle to self-service continues to be the reluctance of the sale clerks to accept material responsibility for the goods stacked on open shelves. Still the emphasis on obsolete yardsticks adds to the resistance.

94. Ia. Orlov, *Voprosy ekonomiki,* 1969, no. 4, p. 52.
95. *Literaturnaia gazeta,* 30 March 1968, p. 10.

Changing Technology and the Future

The advent of the computer and advances in technology provide both an opportunity and a challenge for consumption statisticians. The first thing that comes to mind is that the computer will make it possible for statisticians to process larger quantities of data and keep their fingers on more activities. The computer will provide the Russians with the opportunity to utilize more complex formulas with many more variables.[96] Raitsin feels, for example, that it will soon be possible to process a massive model of nationwide consumption.[97]

At a less ambitious level, the Russians are extending their work with rational diets, something that has been very difficult to do without the use of computers.[98] Computers linked together with the proper kinds of input machinery will also make it possible to maintain precise inventory information. As is done in this country, the Russians are beginning to utilize cash registers like the Sweds which make possible the recording not only of the ruble value of the sale but of the particular commodity sold. Alternatively a coded tab is attached to each piece of merchandise and removed by the cashier at the time of sale. This information can be compiled at the end of the day. The store or enterprise manager is then in a position to know which are his fastest-moving goods and what stocks he should replenish. Many American stores have been using such techniques for some time. Now GUM is attempting to follow a similar procedure.[99] Given the present dependence on the abacus in almost all Soviet stores (sometimes it is even used in conjunction with the more modern equipment), it looks as if it might be a long time before such a system can be widely adopted in the Soviet Union.

Helpful as such techniques are, it is necessary to remember that the computer often takes on a life and code of its own. A mere human being is easily browbeaten by a machine as intimidating as the computer. All too often it is forgotten that the computer's results are only as good as the computer's program, which in turn is designed by a fallible human being. This is a problem that also arises periodically for American businessmen. They are often reluctant to challenge the results printed out by the computer.

The danger of accepting the computer's findings are even greater in the USSR, where no one wants to do anything without authorization (preferably written) from above. It is the unusual manager in the context of the USSR who questions his superior or makes a decision on his own

96. Karapetian et al., p. 133.
97. Raitsin, p. 640.
98. Shvyrkov, p. 291.
99. *Sovetskaia torgovlia*, 3 July 1969, p. 3.

where there are no precedents. By the same token, the average manager is going to be reluctant to contradict the *written* program of the computer. In fact, the printed results of the computer will always be there to haunt and embarrass him if his own judgment should prove to be incorrect. For that reason most Soviet managers are likely to follow the "dictate" of the computer. Should this prove to be a mistaken course, the manager can always justify himself by showing that he was only doing what the computer told him to do. In the USSR this could prove to be a hazardous tendency.[100]

100. The author wishes to express his appreciation in particular to Murray Feshbach and Joseph Berliner for their suggestions.

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J. S. Berliner

Real Income and Consumption Statistics: Summary and Assessment

Chapters 13 and 14 would be welcome to statisticians even if they did no more than furnish a useful catalogue of pitfalls. But they offer far more than this, raising a variety of questions about Soviet statistics in general. I would like to comment on a few of these questions.

Both of the chapters on statistics for real income and consumption set forth certain advantages of the USSR in generating economic statistics. Two advantages are cited. First is the advantage of a steady flow of primary data directly from enterprises, which are generated in the process of economic administration. It is indeed an advantage to a society to have available this continuous flow of data. One must recall, however, that this source of data is also the basis of one of the chief problems confronting Soviet planners and analysts, as well as analysts outside the USSR. I refer, of course, to the unreliability of data generated as part of an administrative process. Like our own income-tax reporting and customs valuations, statistics derived from reporters whose status is affected by the numbers they provide are suspect because of the reporters' incentive to falsify. For this reason, statistics gathered outside of the administrative process, by sample surveys or by independent nonadministrative statistical organizations, would provide a sounder basis of planning and analysis.

It has been noted in the past that while data falsification complicates the task of planning and of certain kinds of analysis, it is of less significance for the analysis of time trends, since the degree of falsification is probably roughly constant over time. The argument is generally valid, but an important qualification should be made in the case of campaigns. When a campaign focuses attention on a particular target or success indicator, it tends to increase the degree of falsification in the reporting of those measures. The falsification of reports of agricultural output in 1961, to which Schroeder refers, is an example of this; it followed a campaign for attaining quite unrealistic targets of agricultural output. Current reports of attainments in the "introduction of new technology" are probably also suspect in view of the current pressure for technological

progress. For this reason the "law of equal cheating" does not fully guard us against drawing unwarranted inferences about trends from time-series data.

The second advantage claimed for Soviet statistics is that since most of them are gathered by central agencies, there is a higher degree of uniformity, which is often cheering to the analyst. One must note again, however, that there is an offsetting disadvantage to uniformity. For statistics gathered with a particular end in view—often an administrative rather than an analytic end—may not be appropriate for other purposes. Different planning or demand-forecasting models require different kinds of data in different forms. The quality of research is therefore likely to be lower if there is only one standardized reporting form for all industries. In the same vein, it may not be a source of regret, as Goldman suggests, that there is no unanimity over techniques of demand forecasting. The presence of disagreement may be regarded as an advance, from the point of view of Soviet scholarship, over the enforced unanimity of earlier days.

Turning now to consumption and real-wage statistics in particular, it would be useful if the general editor would compare the state of published statistics in these fields with that in other fields. Goldman suggests the result by noting that 90 percent of TsSU work deals with production statistics. That fact in itself does not necessarily mean that consumption statistics are underrepresented, for a substantial proportion of the 90 percent must consist of the production of consumer goods. Still, it is probably true that the consumption side gets short shrift. It may be argued, however, that this makes good sense from the Soviet point of view.

To pick up the thread of a question introduced by Kahan, one may ask what benefit the Soviets would enjoy if they increased expenditures for statistical work on consumption and real wages. Two sorts of benefit come to mind. One is an increase in the total utility the society would enjoy from a given allocation of resources to consumption. The other and related gain is a reduction in inventories of unsold goods.

With respect to utility, the argument would not count for much if one assumes, as I think we must, that the dominating element in the Party's objectives function continues to be maximization of the growth rate of the capital stock. In terms of that objective, it matters a great deal that the intermediate and capital goods produced are efficiently employed. But it does not matter very much that the consumer goods produced are efficiently employed. For the former produce more capital, but the latter produce only utility.

From our own utility-based perspective, we may argue that a given quantity of utility could be obtained with a smaller deflection of resources

into consumer goods if those goods were distributed in such a manner that equimarginal conditions obtained. In the future, perhaps, this argument may carry increasing weight. There is further merit in the argument that the elasticity of effort with respect to real income is declining, so that consumer goods are important as means, if not as ends. But these points may be regarded as mere qualifications. Given Soviet objectives, the paucity of real wage and consumption statistics makes perfectly good sense.

Leaving utility aside, until fairly recently, repressed inflation kept the shelves generally clear of stocks. The planners were probably well advised to make no use of the budget studies collected by Starovskii's people. There is little point to forecasting demand when everything can be sold. Now, however, the number of markets in excess supply has been increasing, and better demand forecasting can help reduce inventories of unsold stocks. One may still wonder whether the gain from reduced inventories is worth the cost of additional planning and statistical effort. Except for perishables, stocks can easily be worked off, with reasonably responsive production and pricing policies. It may be instructive to recall that expensive demand forecasting techniques were developed for and sold to capitalist firms in oligopolistic markets, for whom the expenditure may be quite rational. It is not at all self-evident that such expenditures make sense in the context of a planned economy—however imperfectly planned.

The conclusion of these ruminations is that the doleful lack of statistics in these areas may reflect not a penchant for secrecy nor a desire to conceal failures, but rather a simple and probably correct judgment that there is little economic payoff from this type of outlay. In the terms of the question posed by Kahan, the Soviets may be acting in this area as if there were a market for statistics, and they find the price too high.

To proceed to those statistics that are published, the preceding two chapters provide a useful basis for evaluation of the main statistical series. They may be evaluated either from the point of view of the non-Soviet user, or of the Soviet user. Much of the most valuable material in the papers is that directed toward non-Soviet users. I refer, for example, to Schroeder's diligent study of the elements that enter into the calculation of what she calls the "social wage." Actually, the concept is more akin to an income than a wage, since such component elements as rent subsidies are not really factor payments.

Less convincing, however, is the evaluation of the statistics from the Soviet point of view. For one thing, it is difficult to evaluate statistics when we are not privy to the purpose for which they were gathered. For example, Goldman suggests that the 240,000-sample budget studies

are defective because of the omission of agricultural workers. Without additional information, however, it is possible that the study was intended to deal primarily with urban families. Similarly, in his interesting discussion of the relationship of statistics to demand forecasting, Goldman seems to be saying that the statistics are simply not available for successful forecasting; there are no systematic data on stocks of consumer durables or on useful lives of durables. But most of the simple estimating equations he presents do not call for such data. It would have been wasteful for the Soviets to have generated data in advance of their analysts' perceived need for it. Goldman's discussion carries a rather critical tone, but the same story could be told in a way that would give the Soviets more credit for knowing what they were doing—thus: Until recently the marketing of consumer goods presented no problems, and the Soviets wasted no effort on consumption statistics and demand forecasting. But with the rise of inventories of unsold stocks, attention has begun to turn to demand forecasting, and as estimation techniques develop, new statistics are being generated as required by increasingly sophisticated techniques. This formulation may exaggerate the degree of consciousness and rationality of statistical policy, but it seems not to be too unfaithful to the facts.

A final comment may be in order on that old can of worms, the price-quality problem, which both chapters allude to. Schroeder, for example, discusses the downward bias in the price index caused by the reclassification of slightly changed products as "new" products. We are powerless to make any sensible adjustments for this bias. It may be worth pointing out, however, that in recent years a new factor has been at work which tends to promote genuine quality improvement, perhaps in excess of what consumers may wish; and these improvements may not be fully reflected in price changes. I refer to the state quality certification procedure. The rules of that game require ministries to present a certain number of products each year for quality certification. The products presented must always show improved technical parameters—of speed or durability or reliability or finish or whatever. Since the certified products go through rather elaborate testing and inspection procedures, they are likely to be genuinely improved in technical quality and are entitled to a price markup. There is no provision, however, in either the letter or the spirit of the legislation, for products of lower technical quality at reduced prices. The legislation reflects what has been called the technological bias of Soviet policy: if it is technically better, it must be economically better.

We may suppose that an optimal quality-mix would consist of a certain distribution of outputs of various technical grades and at various prices.

But the state quality certification procedure introduces an administrative bias in the single direction of higher-priced and higher-quality goods. It may take some effort to imagine the result, but it suggests that the Soviet economy may be moving toward a state in which high-quality goods will dominate the market and cheap low-quality goods will be hard to buy. You may find this prediction too hard to take, but if you set your mind to it you can surely recall equally strange consequences of so-called "administrative solutions" to economic problems.

I do not wish to press the point too hard, but to present it only as a factor to be kept in mind in dealing with the quality aspect of real income statistics for the past few years. It does not, however, go to the heart of the price-quality problem. Schroeder summarizes the state of our helplessness well when she asks whether "any price index, no matter how technically faultless, can adequately measure changes in real welfare in the Soviet context."

VI

Statistics on Prices and Money

16

Morris Bornstein

Soviet Price Statistics

This chapter undertakes to describe and evaluate the major official Soviet price statistics, with emphasis on those published by the Soviet Government and available to outside scholars. We address ourselves to the statistics of prices compiled by the statistical apparatus—i.e., the USSR Central Statistical Administration (TsSU) and its republic, oblast, and local affiliates—rather than to the statistical studies of prices performed by agencies concerned with price setting, e.g., the Price Bureau of USSR Gosplan before 1965 and the State Commission on Prices since 1965 and its Research Institute on Price Formation since 1967. We focus on the coverage, collection procedures, statistical methodology, and publication practices in the field of price statistics.[1]

Before 1930, a broad array of price statistics was published in the Soviet Union. Indeed, even before the 1917 Revolution, a variety of wholesale, retail, and agricultural procurement price data was available. Beginning in 1919, TsSU and various other government agencies collected and regularly published statistics for the various types of prices.[2]

1. Fuller citations for the works referred to in text and footnotes will be found in the List of References at the end of this chapter. It is beyond the scope of the chapter to provide a systematic review of the basic theoretical and practical problems involved in constructing index numbers in general or price indexes in particular, although various problems are mentioned in describing and evaluating the official Soviet statistics. See Allen, "Price Index Numbers," for a recent comprehensive and concise treatment of this subject. Neither does the chapter undertake to analyze or compare the indexes of Soviet prices constructed by various Western scholars—e.g., Bergson, Bernault, and Turgeon, "Prices," and Bergson and Turgeon, *Prices*, for basic materials; Moorsteen, *Prices*, for machinery; Chapman, *Real Wages*, for retail and collective farm market prices; and Karcz's two studies for agricultural and collective farm market prices. Except for Karcz's article, "Quantitative Analysis," these Western studies were undertaken to obtain approximate measures of price changes in the USSR in the absence of published official Soviet statistics, rather than to provide an alternative to official statistics which were available but were considered unreliable. That is, these Western calculations were made because of the unavailability at the time of official Soviet statistics of prices, rather than because of dissatisfaction with such statistics. Cf., for example, Bergson et al., "Prices," p. 303; Moorsteen, p. 2; and Chapman, pp. 1–2. Thus Chapman concludes (p. 159): "In view of the evidence as to the reliability of the Soviet retail price index numbers for this period [the postwar years] and considering also the more complete price data available to the Soviet statisticians than to an outsider, I would not hesitate to rely more heavily on the Soviet than on my own retail price index numbers for purposes of comparing the postwar years with 1940."

2. Details are given in Stoliarov, 1969, pp. 83–93; and some of the statistics are assembled in Malafeev, pp. 317 ff.

This policy came to an end in 1930, following the reorganization and purges of the statistical and planning apparatus. According to S. G. Stoliarov, Chief of the Department of Statistics of Prices and Price Formation of the USSR TsSU:

> Great damage to statistics of prices and economic work was done by the fact that in 1930 the publication of statistical materials on prices and, in particular, the publication of indexes of wholesale and procurement prices were discontinued. Moreover, in statistical and planning organs, ministries, and departments the systematic calculation of these indexes was discontinued altogether. Price statistics in the 1930's and for many years later were limited largely to the calculation of indexes of retail prices.[3]

Thus, from 1930 to 1953, work on price statistics was limited to the collection of price data and the calculation of indexes of retail prices of state, cooperative, and CFM (collective farm market) trade, although virtually none of these series were published. Beginning in 1953, the program of retail price statistics was expanded by the calculation of indexes of prices of the consumer cooperative commission trade; indexes of the relationship of state retail prices, commission prices, and CFM prices; indexes of prices on goods established by local government bodies; and indexes of state retail prices by union republics. Regular publication of index numbers of retail prices in state and cooperative trade and on the collective farm market began in 1956. Not until 1958, however, was work resumed on the calculation of indexes of wholesale prices and agricultural procurement prices. To perform these tasks, separate departments of statistics of prices and price formation were established in the USSR TsSU and the TsSU's of almost all the union republics, and detailed methodological instructions were furnished by the former to the latter in January 1959.[4] Regular publication of annual indexes of industrial wholesale prices began in 1963, but indexes of agricultural procurement prices are still not published on a regular basis in the annual statistical yearbook (*Narkhoz*).

As in the case of the statistics themselves, the publication of methodological explanations has been very limited. For example, in the 520-page 1965 edition of Gozulov's standard university text on economic statistics, there is only a three-page section (pp. 346–49) on retail price statistics, and wholesale and agricultural procurement prices are dismissed with the terse statement that they are established by special government

3. Stoliarov, 1969, p. 93.
4. Ibid., pp. 93–94; 1963, p. 76.

resolutions.[5] The sometimes lengthy discussions of retail price statistics in books on trade statistics are devoted largely to explaining different index number formulas by hypothetical examples.[6] The two slim specialized books on price statistics which have been published—by Stoliarov (1960, 1963, and 1969 editions), and Sadekov and Iakovlev (1961)—are sketchy or silent on such critical technical details as sampling and weighting procedures. Only a few relevant articles have appeared in the journals,[7] and they provide little additional information. Thus, it is clear that the Soviet authorities still regard price statistics as a sensitive subject, to be shielded from external scrutiny by controlling the disclosure of both the statistics themselves and the explanation of their derivation.

With the exception of CFM price statistics, Soviet price statistics have not previously been subjected to a detailed scholarly analysis. Therefore, a major task of this chapter is to assemble and examine the available information on the principal categories of Soviet price statistics. These include statistics for industrial wholesale prices, agricultural procurement prices, state and cooperative retail prices, and CFM prices, as well as the observation of prices set in the union republics and sample surveys of specific aspects of price formation. The several categories are examined in turn, and for each, consideration is given to the coverage, calculation, use, and publication of the statistics. Where relevant, some comparisons are made to U.S. price statistics. Such comparisons provide an additional viewpoint for the appraisal of Soviet price statistics, especially for practical, as opposed to theoretical, considerations. They also help to identify some features of Soviet price statistics which are attributable to the nature of the economic system. Different economic systems vary in the type and quantity of statistical data required, on the one hand, and in the kind of data generated and the methods of collection, on the other.

On the basis of this detailed analysis of the various types of price statistics, a general evaluation of the Soviet program of price statistics is undertaken in the last section of the chapter.

Industrial Wholesale Prices

Industrial wholesale prices are those at which goods are transferred or evaluated within the state sector of the economy. The term covers prices of producer goods, including raw materials, semifabricates, and

5. Gozulov, pp. 346–49.
6. E.g., Riauzov and Titel'baum, pp. 190–243.
7. E.g., Deriabin; Stoliarov, 1967; and Smirnova, 1969.

machinery, as well as manufactured consumer goods. It excludes prices at which agricultural products are obtained by the state from collective and state farms, but includes prices at which procurement agencies sell agricultural products to state enterprises for processing or to trade organizations for retail sale. It also excludes foreign-trade prices, although it includes the prices at which foreign-trade organizations buy from and sell to Soviet enterprises.

There are two main types of industrial wholesale prices. The enterprise wholesale price (*optovaia tsena predpriiatiia*) is the price at which a producing enterprise sells its output. The industry (i.e., branch of industry) wholesale price (*optovaia tsena promyshlennosti*) is paid by the state-enterprise buyer and includes, in addition to the enterprise wholesale price, (1) the turnover tax, if any, on the product; (2) the markup of the branch sales organization; and (3) transportation charges if these are borne by the sales organization rather than the buyer.[8] In the period since World War II, there have been major reforms of industrial wholesale prices in 1949, 1950, 1952, 1955, and 1967. In addition, there were more limited adjustments in particular industries between 1958 and 1967.[9]

Indexes of Output Prices

As noted above, the TsSU did not work on wholesale prices from 1930 to 1958. When this activity was resumed, the first program was to calculate retrospective indexes for industry wholesale prices for the output of industry as a whole, heavy industry as a whole, ten branches of heavy industry (ferrous metallurgy, nonferrous metallurgy, coal, petroleum refining, electric power, construction materials, timber, paper, chemical, and machine-building and metalworking), the light and food industries separately, and the light and food industries combined. For all branches except machine-building and metalworking, indexes were calculated by weighting prices for a sample of 278 specific items by the quantity of their marketable output (*tovarnaia produktsiia*) in 1956. Neither the list of commodities nor their respective weights have been published. The only description is the remark by Stoliarov: "The weight of the commodities included in the sample constituted 53 percent of the

8. In addition, a settlement or accounting price (*raschetnaia tsena*) is used in some branches where production costs diverge widely, notably the extractive branches. Individual enterprises or groups of enterprises receive different settlement prices, rather than a single, uniform enterprise wholesale price, from the branch sales organization. The latter, however, sells to customers of the branch at a single industry wholesale price.

9. Details may be found in Malafeev, pp. 245–57, 312–22; and Schroeder.

total volume of marketable output at 1956 prices, which made it possible to consider this sample sufficiently representative."[10]

A principal aim was to fill in the "blank spaces"[11] for the years when such indexes were not constructed. Therefore, an attempt was made to price the sample commodities at 1913, 1926/27, 1935, 1936, 1940, 1948–58, and 1960–62 industry wholesale prices. Inevitably, the farther back in time, the smaller the number of sample items which could be priced. Of the 278 items included in 1956, only 236 had 1936 wholesale prices, 188 had 1926/27 prices, and 167 had 1913 prices. Thus, it was necessary to group articles by the years for which prices were available, construct chain indexes, and then link the indexes into the overall index. The results were expressed with 1913, 1940, and 1948 as reference bases.

A different procedure was adopted for the output of machine-building and metalworking, on the ground that the rapid introduction of new items made it impossible to use a sample with constant weights. In this case, the procedure was to calculate an index from data evaluating gross output (*valovaia produktsiia*) for the year in both current transfer prices and "constant" prices.[12] The resulting index for machine-building and metalworking prices was then combined with the other sector indexes according to their respective weights in 1956 marketable output.[13]

While there is no explicit criticism of this treatment of machine-building and metalworking in Stoliarov's terse account, he appears to be quite aware of its deficiencies—referring to the "cleaner" (*bolee chisto*) method of a fixed sample—but to consider it necessary in order to get some sort of historical series.

Since 1961, TsSU has calculated a straightforward Laspeyres-type index for enterprise wholesale prices (excluding turnover taxes) and for industry wholesale prices (including turnover taxes) for all branches, including machine-building and metalworking. The only information available is that the indexes refer to end-of-year prices and are constructed from a sample of 961 commodities which accounted for 56 percent of the value of marketable output in 1961.[14] Neither Stoliarov nor *Narkhoz 67* states whether this percentage refers to marketable output at enterprise wholesale prices or industry wholesale prices, though the

10. Stoliarov, 1969, p. 124.

11. Ibid., p. 94.

12. Though the latter are not specified, they presumably were 1926/27 prices through 1950; 1 Jan. 1952 enterprise wholesale prices for 1951–55; and 1 July 1955 enterprise wholesale prices beginning in 1956. Gozulov, p. 186.

13. Stoliarov, 1969, pp. 124–25.

14. Stoliarov's page-and-a-half account and the cryptic notes in the statistical yearbooks, e.g., *Narkhoz 67*, p. 923, are the only explanations of the TsSU industrial wholesale price index which I have been able to discover. Stoliarov, 1969, p. 127.

latter is perhaps more likely.[15] No information is available on the list of commodities, their actual prices or price relatives, or their weights. Nor has it been disclosed whether the machine-building and metalworking category includes military as well as civilian products. However, Stoliarov affirms that detailed specifications from the official price lists are used for each item, including the unit of measure, the model number, technical characteristics, treatment of freight charges, the zone to be used in the case of zonal pricing, etc.[16]

The old and new indexes of industrial wholesale prices have presumably been linked together (perhaps at 1961) to provide a series for the period since 1948. Separate index numbers for enterprise and industry wholesale prices—for eleven of the twelve branches for which they are reported to be calculated, as well as for all heavy industry, all light industry, and all industry—have been published, with 1949 as the reference base, for 1950, 1952, 1955, 1958, 1960, and 1962–67.[17] The 1949 reference base is the most common, but indexes for industry wholesale prices (though not enterprise wholesale prices) have also been presented with 1940 and 1948 as reference bases.[18] The series published in the statistical yearbooks exclude 1959 and 1961, although the aggregative and a few branch index numbers for those years have been disclosed by Stoliarov (1969, pp. 127–29). The indexes for nonferrous metallurgy, long considered a sensitive activity by the Soviet authorities, are not published.

The index numbers for earlier years have usually been reprinted without change in subsequent yearbooks. However, there are exceptions in the case of some index numbers for 1962 and 1964, which were revised in the next yearbook. Most of the revisions were minor—one percentage point higher or lower—but there were two changes of 2 points and one change of 6 points. Small changes may be due to minor corrections affecting the rounding of the two-digit index numbers, or possibly to changes in the classification of commodities by branch of industry, but the 6-point change (in enterprise wholesale prices of the food industry for 1962) must be of quite a different nature. However, the original figures had not been labeled as preliminary in any of these cases, and no explanation was given for any of the changes.

Perhaps because of the paucity of published information about the construction of the index—or perhaps because of the sensitivity which this implies—little comment about the index has appeared in the Soviet

15. Gozulov, p. 203.
16. Stoliarov, 1969, pp. 132–33.
17. *Narkhoz: 62*, pp. 144–45; *65*, pp. 166–67; *67*, pp. 226–28.
18. *Narkhoz 67*, pp. 227–28.

technical literature. The only published criticism I have discovered is that the procedure used in pricing a fixed sample seriously misrepresents actual trends in the prices of the output of machine-building and metalworking. The reason is that a large share—at least one-third—of the output of machine-building and metalworking is classified as "new products" for which high "temporary" wholesale prices are set for the period of "mastering production," after which lower "permanent" wholesale prices are supposed to be fixed. To increase the value of output, sales, and profits, enterprises commonly make minor modifications in existing products so as to get them classified as new products and sell them at prices above those in the established price lists. The TsSU index apparently ignores this phenomenon by limiting itself to a fixed sample of fully specified goods produced in 1961—the prices of at least some of which, moreover, have since been reduced as production costs fell after 1961. Thus, the TsSU index shows a decline in the prices for the output of machine-building and metalworking after 1960, while the prices of the output of this branch actually rose. That is, the index for machine-building and metalworking misstates the *direction* of price change in this branch and in turn distorts the indexes for the prices of output of heavy industry and all industry, of which it is an important component (Kvasha and Krasovskii, p. 77). This deficiency seriously weakens the usability of these wholesale price indexes as deflators of output series in current prices, although it is not clear to what extent the published TsSU series are in fact used for this purpose.[19]

The indexes just examined refer to end-of-year prices and are, as noted, constructed from a fully specified sample of 961 commodities weighted by their share in marketable output in 1961. In addition, since 1961 TsSU has also calculated indexes of annual average wholesale prices for a much larger list of commodities, using current-year weights. The data are obtained from the reports which enterprises periodically submit about the value of their output. These reports show the value of marketable output of the reporting year both in the prices of the reporting year and in the prices of the preceding year, as well as data on the quantity of output, *sebestoimost'*, profits, etc.

Enterprises in heavy industry submit such information annually[20] (in an Appendix to Form 6, "Questionnaire About the Profitability of Major Types of Output of Industry") for a list of items agreed upon by

19. On whether the official series are used as deflators in national income calculations, see Chapter 4 by Becker and Chapter 5 by Cohn in this volume.

20. As an exception, to avoid "mixing" the pre-reform and post-reform prices which were used, respectively, in the first and second halves of 1967, enterprises were instructed to submit reports covering only the second half of 1967, in new prices. Stoliarov, 1969, pp. 141–42.

the TsSU, the Ministry of Finance, and the industrial ministries. This nomenclature—the so-called "all-union minimum"—included about 2,000 items beginning in 1961, out of a complete industrial nomenclature of three-to-four times as many entries. Effective in 1966, the list of items to be covered in the annual reports was expanded to 3,400. Although detailed reporting is limited to the agreed list, the report must also show the percentage of the enterprise's total output which is covered by items in the list.[21]

Enterprises in light industry report semiannually (for the first half of the year and for the year as a whole) on a separate form (Form 1, "Questionnaire About the Sale of Industrial Output") for about 200 items, which are then combined into 29 groups.[22]

From these data, Paasche-type indexes of enterprise wholesale prices and of industry wholesale prices (the latter including allowances for turnover taxes and sales charges) can be calculated. Stoliarov notes that, "Such indexes can be calculated for industry as a whole, for groups and branches of industry, for forms of subordination, for the corresponding territory," but he does not make clear just which of these indexes are in fact constructed.[23]

In addition to series of average prices and indexes of average prices, this statistical program provides data on sales and trade markups, profitability, and turnover tax per unit of a commodity. This information is reported to be used in analyzing price movements, studying price structures, and deflating current-ruble series.[24]

The series for average wholesale prices and indexes of average wholesale prices have not been published, but some of the results for the structure of prices have been disclosed in a series in the statistical yearbooks which shows—separately for all industry, heavy industry, and light industry—the percentage of industry wholesale prices accounted for by (1) expenses of industrial enterprises and sales organizations, (2) their profits, and (3) turnover tax. Data have been published for 1958 and 1962–67, with some revisions in the figures for 1962 as published in the 1963 yearbook compared with those previously published in the 1962 yearbook.[25]

Indexes of Input Prices

As early as 1961, Deriabin in his article in *Vestnik statistiki* (p. 12) pointed out the need for indexes of input prices characterizing price

21. Ibid., pp. 138–39.
22. Ibid., pp. 133–38.
23. Ibid., pp. 125–26.
24. Ibid., pp. 138–39.
25. *Narkhoz: 62*, p. 146; *63*, p. 138; *64*, p. 156; *65*, p. 168; *67*, p. 229.

changes from the viewpoint of consumers, in addition to the more conventional indexes of the prices of output from the viewpoint of the producing industries. Specifically, he stressed the need for indexes of wholesale prices of raw materials for the industries processing them (e.g., an input price index covering the wholesale prices of raw materials purchased by the chemical industry) and for individual indexes of the prices of machinery purchased by different branches of the economy (e.g., agriculture, construction, railway transport), weighted by the structure of their purchases. Some of these indexes presumably have been constructed—for example, to deflate expenditures on material inputs in the process of calculating national income by sector of origin at constant prices.[26] However, the only reference to such an index which I have been able to locate in the literature is Stoliarov's brief description of an index of prices of industrial inputs purchased by agriculture, which apparently has been calculated since the mid-1960's.[27]

The index is described as covering wholesale prices on production items and construction materials used in agriculture. It is calculated from a sample of representative commodities, including basic types of agricultural machinery, tractors, motor vehicles, fuels and lubricants, timber and construction materials, feed, mineral fertilizers, agricultural chemicals, electric power, and spare parts. The weights are the quantities of these items supplied to agriculture in 1963. The index is presented with a 1960 reference base.

No information is available about the number of items in the sample, the dates or periods for which prices are collected (end-of-year, annual average, etc.), or the weight of each item or all the sample commodities together in total inputs purchased by agriculture in 1963. No explanation is given about the prices used for commodities, such as fuels and metals, which farms were required to purchase at retail rather than wholesale prices. Also, although Stoliarov declares that the use of such a sample "makes it possible to calculate this very important index for the USSR as a whole, for union republics, and for agricultural zones," he does not indicate for what geographical areas the index is in fact calculated.

The index is described as useful for the analysis of the relationship of wholesale and agricultural procurement prices, the profitability of agricultural enterprises, and the financial relationship of collective farms with the state, and for the examination of tax policy. Presumably for these purposes the index is calculated regularly. So far as I have been able to discover, the series has appeared only in Stoliarov (1969), which presents

26. See Chapters 4 and 5 in this volume.

27. Stoliarov, 1969, pp. 131–32. In the 1963 edition of his book (pp. 107–8) Stoliarov stated that such an index had not yet been calculated but should be. The use of 1963 weights suggests that the construction of the index could not have begun until 1964 or 1965.

the index numbers for 1960–66 for the overall index and for motor vehicles, tractors, agricultural machinery, spare parts, electric power, and feed.

Comparison with U.S. Statistics

Such comparisons are severely constrained by the paucity of information about the Soviet indexes, but some relevant observations may be made.

The U.S. counterpart of the Soviet indexes of enterprise and industry wholesale prices is the Wholesale Price Index (WPI) of the Bureau of Labor Statistics (BLS).[28] Although both the Soviet and U.S. indexes refer to the selling prices of producers, in the Soviet index products are grouped by industry of origin, while the basic classification system of the WPI follows commodity lines, grouping products by similarity of end-use or material composition. However, the BLS calculates a number of special group indexes—such as by state of processing and durability of product—and it has begun a program to construct industry-sector output price indexes (and eventually industry-sector input price indexes).[29] The commodity coverages of the Soviet and U.S. indexes differ in both scope and detail. The BLS index includes agricultural products and imports, both omitted from the Soviet index, but the BLS index excludes military output, which is presumably included in the Soviet index. The BLS index is constructed from over 2,200 items, arranged in 15 major groups, 90 subgroups, and 314 product classes, while the Soviet index is based on 961 items, the distribution of which has not been disclosed. In both cases, prices are obtained for precisely specified items, though the method of collection differs: official price-lists are used for the Soviet index, while the BLS collects price quotations primarily through mail questionnaires.

Both indexes are of the Laspeyres type. The Soviet index uses weights based on marketable output in 1961, while the BLS index is weighted by the value of shipments as reported in the latest industrial censuses (currently 1963). The BLS revises its weights periodically as data from new censuses become available (approximately every five years), while no scheme for periodic revision of the weights of the Soviet index has been revealed. Both indexes are presented with a reference base different from the weight base: 1949 in the Soviet case and the average of 1957–59 in the U.S. case.

Although both indexes use a fully specified sample, the treatment of

28. The discussion that follows is based on *Handbook of Methods*, pp. 91–113.
29. *Review of Federal Statistical Programs*, pp. 179, 184–98.

new commodities is quite different. Apparently no allowance is made in the Soviet index for the introduction of new commodities. In contrast, when the specifications of existing commodities are changed or new commodities enter into common use, the BLS substitutes a new price series for the earlier one by direct comparison or by linking.

The difference in publication policy is most striking. The complete BLS index is published regularly on a monthly basis; in addition, a weekly index provides a modified extension of the latest complete monthly index calculation. In the first month of publication, the monthly indexes are considered preliminary and subject to revision. In the following month, revisions and substitutions of actual prices for estimated prices are incorporated. These indexes are normally considered final, and subsequent revisions are published only if the magnitude of error warrants. In contrast, the Soviet index is published annually in the statistical yearbooks, commonly a year after the period covered, and although revisions are made, neither the general policy nor the specific corrections have been explained.

To summarize: both the Soviet and the BLS indexes use fixed weights and a sample of fully specified items. However, the BLS index is broader in scope, is based on more than twice as large a sample, incorporates new commodities into the sample, and is published frequently, promptly, in full detail, and with revisions explained. To some extent, these differences correspond to differences in the nature of the prices to which the indexes refer and in the uses made of the indexes. In the USSR, wholesale prices are administratively fixed and infrequently changed, and – more important – do not play a major role in the allocation of resources. In the United States, prices are flexible (some more than others) and do have a decisive effect on resource allocation. Thus, the BLS index is widely used by both government agencies and private organizations for many purposes, including market analysis, budget-making, adjustment of long-term purchase and sale contracts and wage agreements, deflation of current-value data, and formulation of monetary and fiscal policies. For these purposes, there is a need for regular and frequent publication of detailed and fully explained statistics. In contrast, in the USSR wholesale price indexes have much less operational significance for enterprises and government agencies. Their use in planning and national income calculations is unclear. For whatever official purposes price indexes may be needed, the users presumably have more detailed, more current, and more fully explained indexes than those which are published. However, these unpublished indexes presumably suffer from at least the defect in the treatment of new commodities noted above.

The U.S. counterpart of the Soviet index of prices of industrial inputs

purchased by agriculture is the index of prices paid by farmers for commodities used in farm production, prepared by the Statistical Reporting Service (formerly part of the Agricultural Marketing Service) of the U.S. Department of Agriculture (USDA).[30] Both indexes use fixed weights: in the Soviet case, quantities supplied to agriculture in 1963; in the U.S. case, the share in farmers' expenditures in 1955. Both indexes are presented with reference bases different from their weight bases: in the Soviet case, 1960; in the U.S. case, 1910–14 (as required by legislation concerning the calculation of the agricultural parity ratio) and 1957–59 (the standard reference base established by the Office of Statistical Standards of the Bureau of the Budget). The USDA collects data on average prices for 247 commodities, chiefly through mail questionnaires completed by 35,000 stores in rural areas and shopping centers selling to farmers. No information has been disclosed about the size of the sample and type of prices in the Soviet index. The U.S. index is published monthly, with a continuous series available for the period since 1910. The Soviet index, which apparently covers the period since 1960, is not published regularly.

In both cases, the index is used for calculations of changes in the terms of trade of agriculture—a politically sensitive issue in both countries. In the Soviet case, the index is used in planning and financial calculations, but political sensitivity apparently precludes regular publication or wide publicity. In contrast, the U.S. index is regularly published and is combined with other indexes to compute parity prices of farm products, which in turn are used to determine support levels for price-support programs. Thus, in the U.S. case, political sensitivity is responsible not only for wide publicity but even for statutory specification of the method of index-number construction.[31]

Agricultural Procurement Prices

These are the prices at which state procurement agencies obtain agricultural output from collective farms, collective farmers and others with private plots, and state farms. Three types of prices may be distinguished: (1) obligatory delivery prices (*tseny obiazatel'nykh postavok*) paid for

30. *Major Statistical Series*, 1:31–68; *Inflation and the Price Indexes*, pp. 107–11.

31. A "parity ratio" is derived from (a) the index of prices received by farmers, (b) the index of prices paid by farmers for items used in production, (c) the index of prices paid by farmers for items used in family living, and (d) measures of changes in interest or indebtedness secured by farm mortgages, taxes on farm real estate, and wages paid to hired farm labor. The derivation of the parity ratio is specified by congressional legislation. The treatment of taxes and interest has been criticized on the ground that it yields indexes of expenditures rather than price indexes. *Price Statistics of the Federal Government*, pp. 76–77.

sales by collective farms and private plots in fulfillment of delivery quotas; (2) state purchase prices (*tseny gosudarstvennykh zakupok*) for their above-quota sales; and (3) state-farm delivery prices (*sdatochnye tseny sovkhozov*). In addition, procurement agencies used to acquire output from collective farms as payments-in-kind for services rendered by the machine-tractor stations (MTS's). In 1958, multiple pricing for collective farms was replaced by a single state purchase price for each product; compulsory deliveries from private plots were eliminated; and the MTS's were abolished and their machinery sold to the collective farms. Thus, since 1958 procurements from collective farms and private plots have been exclusively at state purchase prices, although in 1965 premium prices were reintroduced for above-plan sales of wheat, rye, cotton, and sunflowers.

As noted earlier, in 1930 TsSU stopped collecting data on and constructing indexes of agricultural procurement prices. When the work was resumed in 1958, the first task was to construct a retrospective series.[32] Average procurement prices were calculated for 1913, 1926/27, 1929, and 1940 onward, for 27 basic agricultural products, which accounted for about 83 percent of the value of procurements from collective farms and private plots in 1956. In computing average prices for grain crops, sugar beets, cotton, sunflowers, flax, and potatoes, payments-in-kind for MTS services were omitted. The available data did not permit their exclusion for the other commodities, whose average prices were therefore somewhat lower, but as the share of MTS payments in the marketing of the other commodities was very small, the inconsistency is not serious. Average prices were calculated inclusive of premium payments for technical crops but exclusive of premia for higher quality in the case of grain and oil crops—again because of data limitations. The average prices so obtained were weighted by state procurements in 1956 to obtain indexes for groups of products and for total procurements, presented with 1913 and 1952 as reference bases. Index numbers for 1952–59, with 1952 as the reference base, were published for the 27 commodities, plus various groupings of them, in 1960.[33]

At present, the USSR TsSU and the union republic TsSU's are reported to construct annual price indexes for purchases from collective farms and private plots, for state farm deliveries, and for the two combined. Annual average purchase and delivery prices are first calculated on the basis of data in the reports of procurement organizations, which show procurements of each product in both physical and value terms,

32. The discussion which follows, on agricultural procurement price indexes, is based on Stoliarov, 1969, pp. 118–20, 120–23, 139; and 1963, pp. 107–8.

33. *Sel'skoe khoziaistvo SSSR*, p. 117.

separately for three groups of suppliers: (1) state farms and other state enterprises, (2) collective farms, and (3) private plots. The average price (i.e., unit value) for each commodity is obtained by dividing the total value of procurements by the total quantity procured. The volume of procurements is at "accounting" weight. The value figures include premia for overfulfillment of the plan but exclude premia and discounts for quality differences, because they are already allowed for in the conversion of actual physical weight to accounting weight.[34] Although data are available to calculate separate indexes for procurements from collective farms and from private plots, a single index is constructed for the two combined.

In computing an index for two successive years, TsSU uses the weights of the later rather than the earlier year. For comparisons over longer periods, it has recognized the shortcomings of using the weights of a single year for an agricultural index. Sometime after 1963,[35] TsSU switched to weights based on the annual average of procurements for several years. It is reported that in calculating index numbers for 1958–65, TsSU used as weights the annual average volume of procurements during 1958–62. The weights for 1966 and subsequent years have not been disclosed.

The current index for prices of procurements from collective farms and private plots is linked with the earlier index to provide a continuous series with 1952 as the reference base. This series has not appeared regularly in the statistical yearbooks, presumably because trends in agricultural prices are considered sensitive, but it has been disclosed in the last two editions of Stoliarov's book: index numbers for 1952–62 in the 1963 edition, p. 106, and index numbers for 1952–66 in the 1969 edition, p. 121. These series are a condensation of the 27-commodity series compiled by TsSU. In contrast to the data for 1952–59 published in 1960,[36] Stoliarov's presentation combines eight different grains into a single category; groups into a single series for "technical crops" such dissimilar commodities as raw cotton, flax fiber, hemp fiber, sugar beets, and tobacco; combines wine grapes, seed fruits, and stone fruits into one group; and aggregates the series for beef cattle, sheep and goats, and pigs

34. "Physical" (*fizicheskii*) or "actual" (*fakticheskii*) weight is what the scale shows, without regard to any variations in quality from the standard specified in the procurement plan. The "accounting" (*zachetnyi*) weight is obtained by adjusting the physical weight up or down for any deviations from the standard quality. Petrov, pp. 403–4. Because of these adjustments, these price index numbers are not consistent with other data published on the actual value and volume of procurements.

35. As late as 1963 Stoliarov (1963, p. 107) was proposing that the weights be based on the average of a number of years.

36. *Sel'skoe khoziaistvo SSSR*, p. 117.

into one series for livestock. Yet Stoliarov shows individual series for hemp seeds and for two types of flaxseed! Thus, his presentation conceals important detail while furnishing data on less significant commodities.

The index for state-farm delivery prices has been calculated since 1958, but has not been published regularly. Index numbers for 1958–66 for the prices of livestock, crops, and all deliveries appear in Stoliarov, 1969, p. 122.

These annual average indexes fail to show seasonal fluctuations in the prices of commodities for which purchase prices vary seasonally—namely, cattle, vegetables, and potatoes. Although Stoliarov advocated quarterly indexes for this purpose in 1963 (1963, pp. 123–24), they are still not calculated, because procurement agencies do not report the value and volume of procurements on a quarterly basis.

The scope and methodology of the Soviet index of agricultural procurement prices may be appraised by comparison with the index of prices received by farmers in the United States, which is calculated by the USDA as part of the computation of the parity ratio.[37] Both the Soviet and the U.S. indexes purport to measure changes in the average price received. However, the U.S. index computes the average received for all grades and qualities,[38] while the Soviet index excludes premia and discounts for quality differences but includes premia for overfulfillment of plan quotas. Thus, the Soviet index does not depict the actual movement of average prices.

Soviet price data are obtained annually from reports of procurement agencies, while U.S. price data are collected monthly, chiefly through mail questionnaires completed by about 9,000 buyers of or dealers in farm products. The U.S. sample includes 55 commodities, whose aggregate sales value represented about 93 percent of cash receipts from total marketings in 1953–57, the weight base for the index. The Soviet index covers 27 commodities, which accounted for 83 percent of the value of procurements in 1956; their share in total procurements in the weight base period of 1958–62 has not been revealed, but presumably was of the same order of magnitude. The Soviet index for prices for collective farms and private plots has a 1952 reference base; the index for state farms, a 1958 reference base. The U.S. series is currently shown with 1910–14 and 1957–59 reference bases. The U.S. index is computed and published in full monthly, with a continuous series available since 1910. The Soviet

37. *Major Statistical Series*, 1:1–30.

38. The USDA does not attempt to price specific grades or types because of the wide variations in the grades and qualities of a given product, the lack of a uniform system of selling by grade, sharp variations in grades from area to area, and the sale without grades of relatively large quantities of most products. *Inflation and the Price Indexes*, p. 108.

index, on the other hand, is calculated annually but published irregularly and in condensed form.

Although the information available on the Soviet index is too sketchy to permit a full evaluation, it appears that the price data, commodity sample, and weighting scheme of the current index can provide a reasonably reliable picture of annual average price movements. However, seasonal price fluctuations are not observed. The 1952 reference base is convenient for tracing developments in agricultural price policy since Stalin, but it involves linking the current index with the earlier retrospective series in which quantities of a single year (1956) were used as weights. Finally, the irregular and incomplete publication of the index limits its usefulness outside Soviet government agencies.

State and Cooperative Retail Prices

The state retail price (*gosudarstvennaia roznichnaia tsena*) is charged by state retail stores, consumer cooperative stores, and state and cooperative service establishments, such as restaurants and repair shops. The consumer cooperatives, which operate primarily in the rural areas, are closely supervised by the state, which determines their number, size, and location, allocates them goods, and establishes their sales plans.

In contrast to the cessation of work on statistics of industrial wholesale prices and agricultural procurement prices from 1930 to 1958, comprehensive compilation of statistics of state and cooperative retail prices continued during the Stalin era. During the 1930's, quarterly and annual retail price indexes were calculated for a number of commodity groups, for food sales and nonfood sales, and for all retail trade turnover—for each of the several trade channels. The work was intensified during World War II, when rationing and multiple prices were introduced. From 1948 to 1954, the statistical program included calculations of the effect of general reductions in retail prices. From 1952 to 1955, besides all-union indexes, the USSR TsSU computed annual average indexes of prices for the individual union republics; since 1956, union republic TsSU's calculate their own quarterly and annual indexes. In addition, the USSR TsSU began constructing price indexes for the commission trade of consumer cooperatives in 1953 and for their other sales at local market prices in 1961. Thus, the program of price statistics for state and cooperative retail trade has not merely continued without serious interruption but has gradually expanded.[39] However, the results of this work were not published during the Stalin era. Only in 1956 did the Soviet government resume the regular publication of index numbers of state retail prices.

39. Sadekov and Iakovlev, pp. 55–57.

Indexes

The indexes for state and cooperative retail prices currently calculated by the USSR and union republic TsSU's attempt to measure the change in the price level of retail sales (including public catering), rather than the cost of living as such. The retail trade turnover used as weights excludes "communal" and "cultural" services, like housing, laundering, and entertainment.[40] Thus, calculations of the cost of living or the purchasing power of the ruble require additional indexes for the prices of services as well as data on household expenditure patterns.[41] However, as of 1968 there was still no comprehensive program for the computation of price indexes for services, although in some of the republics work had begun on the calculation of indexes for 1960–65.[42]

Quarterly and annual indexes of retail prices are calculated for state and cooperative retail trade including public catering, as well as for each of the three channels separately.[43] Each index is calculated from a sample of items considered representative because they are "the most popular and occupy a significant share in the sales of commodities of the corresponding group." The exact number of items in the sample has not been disclosed, although Stoliarov (p. 102) refers at one point to "several hundred." Each item is fully specified as to type, grade, article number, etc. Prices for these items are obtained from official retail price lists and resolutions and regulations of price-setting agencies, such as the USSR State Commission on prices and republic and local bodies. However, none of the following is considered a change in price which should affect the index: (1) new prices on goods not previously produced; (2) new prices for goods for which technical specifications have been changed; (3) temporary prices; (4) new prices on goods removed from production; and (5) reduction of prices on goods not in demand.[44]

Yet, as in the case of producer goods, enterprises introduce "new" consumer goods which differ little if at all from existing goods in order to raise prices and thereby the value of output, sales, and profits. In some cases, the new, higher-priced goods are of lower quality. Because the Soviet index refers only to "permanent" prices, it fails to reflect these price increases. In turn, when the index is used to deflate retail sales in current prices (which do include sales of "new" goods at higher

40. Gozulov, pp. 327, 333.
41. Buzliakov, pp. 89–91, 145–47.
42. Shvyrkov, p. 115.
43. Sadekov and Iakovlev, p. 18; Stoliarov, 1969, p. 107. In addition, quarterly indexes are calculated, for a sample of cities, for the prices of consumer cooperative sales of agricultural products at prices determined by local market conditions. These indexes are discussed below together with indexes of CFM prices.
44. Stoliarov, 1969, p. 106.

prices), the real increase in sales is overstated. However, data to determine the extent of this bias are not available.

In the case of potatoes, vegetables, and fruits, whose prices vary geographically in response to local market conditions, the quarterly indexes of state retail prices are calculated by oblast' and then aggregated to the republic level.[45] For public catering, separate indexes are calculated for (1) the retail prices of commodities used in the preparation of meals and commodities sold over the counter (e.g., candy) and (2) the value of the catering enterprises' markups on these commodities. The two indexes are then combined to obtain the price index for public catering.[46]

The Soviet index of prices in state and cooperative retail trade is calculated with current-period weights, according to the formula for a harmonic index, which is equivalent to a Paasche index. That is, price relatives for each commodity group are weighted by the value of sales in the current (reporting) period.[47] However, other weights must be used *within* a commodity group because retail trade statistics do not report the value of sales of individual types within a commodity group; for example, these statistics report the value of sales of "watches" but not of men's wrist, women's wrist, pocket, and other types of watches individually. Intragroup weights are secured instead from data on production or on the receipt of goods by the retail trade network from the wholesale trade network, adjusted by data on the movement of retail trade inventories. In some cases, relevant weights are obtained from the calculations made by price-setting agencies in connection with price changes.[48] When sales data are lacking, the price index number for the commodity group is calculated as an arithmetic average weighted by the quantity or value of output or shipments.[49]

The year-to-year indexes thus obtained for commodity groups and trade turnover as a whole are then chained together to obtain comparisons with earlier years, for example the series with 1940 and 1950 as reference bases which appear in the statistical yearbooks.[50] Thus, index

45. Sadekov and Iakovlev, pp. 29–32.
46. Ibid., p. 32–35.
47. Stoliarov, 1969, pp. 103–5. The formula for the harmonic index is

$$I = \frac{\Sigma P_1 Q_1}{\Sigma (1/k)(P_1 Q_1)}$$

where the quantities k are individual or group price index numbers of the form P_1/P_0. This reduces to the Paasche form:

$$I = \frac{\Sigma P_1 Q_1}{\Sigma P_0 Q_1}$$

48. Sadekov and Iakovlev, pp. 19–21.
49. Stoliarov, 1969, p. 106; Riauzov and Titel'baum, pp. 203, 212.
50. *Narkhoz 67*, pp. 739, 740, 948.

numbers for, say, 1965 shown with a base of 1950 are not constructed by a direct comparison of the respective prices with either 1950 or 1965 weights. According to a 1961 Soviet source, in recognition of this problem "every five-six years" an index is calculated with the weights of a single period and compared with the product of the linked indexes.[51] However, neither the details of the calculation nor the results of the comparison have been disclosed.

The indexes are reported to be used to deflate trade turnover in current prices to measure changes in real terms; to revalue trade inventories after price changes; and to construct the balance of money incomes and expenditures of the population.[52] However, as noted above, increases in trade turnover in real terms are overstated because the indexes fail to reflect certain types of price increases. Although these indexes are also necessary in the calculation of changes in real wages, their usefulness for this purpose is limited by the fact that the prices to which they refer are in many instances not market-clearing prices corresponding to relative marginal utilities. Thus, these indexes cannot satisfactorily measure whether (and how much) real income has risen or fallen.[53]

Few details of the construction of the index have been disclosed, but more of the resulting index numbers of prices in state and cooperative retail trade (including public catering) have been published than in the case of industrial wholesale and agricultural procurement prices. The most comprehensive series for state retail prices includes annual average index numbers for 12–14 food commodity groups[54] and 15 nonfood commodity groups (as well as aggregate indexes for food, nonfood, and all commodities) for 1950–67, with 1940 as the reference base. Figures for 1950–55 were released in the 1956 trade statistics handbook,[55] and the series has been continued in the subsequent statistical yearbooks. However, the current official trade statistics classification consists of 35 food and 50 nonfood commodity groups.[56] Thus, only about one-third of the index numbers computed in this series are published.

In addition, less comprehensive series have been published with other comparison bases or for fewer commodity groups. Thus, price index numbers for aggregate food sales, aggregate nonfood sales, and total sales with end-of-year (rather than annual average) 1940 prices are

51. Sadekov and Tolkushkin, p. 68.
52. Stoliarov, 1969, p. 108; Sadekov and Iakovlev, p. 21.
53. Chapman, pp. 33–34.
54. For 1950–62 separate series are available for low-grade and high-grade bread products, while beginning in 1963 a single series for bread products and a separate series for flour are shown. A series for cabbage is available for 1950–60 and a series for vegetables for 1950, 1952, and since 1958.
55. *Sovetskaia torgovlia*, p. 131.
56. Riauzov and Titel'baum, p. 76.

available for the period 1950–62.[57] With annual average 1950 prices as the comparison base, detailed series for the various commodity groups have been published only for 1952–61,[58] although the consolidated series for food, nonfood, and all commodities are available for 1951–67.[59] The full series have also been published for 1958–62 with annual average 1952 prices as the reference base.[60] An additional series shows the effect on the retail price level of 9 food commodity groups and 10 nonfood commodity groups, as well as for food, nonfood, and total trade, of the successive general price reductions from 1948 to 1954, with the fourth quarter of 1947 as the reference base.[61]

Although a separate index is calculated for prices of cooperative trade—essentially for the trade of consumer cooperative shops in rural areas—it is not published. The series for the price level of public catering is available, with both annual average 1940 prices and annual average 1950 prices as reference bases, only for the years 1952, 1958, and 1963–67.[62]

Finally, consolidated annual average indexes of prices for state retail trade, cooperative retail trade, and public catering have been published from time to time in some of the statistical handbooks for the union republics. Of 39 republic statistical handbooks accessible to me, 11 included indexes for state retail prices. In the case of the RSFSR, the reference base was average 1940 prices and the commodity groups were the same as in the corresponding series for the USSR as a whole.[63] However, the commodity group breakdowns and reference bases varied in the handbooks for Estonia,[64] Latvia,[65] Lithuania,[66] Tadzhikistan,[67] and the Ukraine.[68]

Although quarterly indexes are calculated for both the individual republics and the USSR as a whole, none have been published, so far as I can discover.

The figures published in the statistical yearbooks have ordinarily not

57. *Sovetskaia torgovlia*, p. 132. *Narkhoz: 56*, p. 232; *58*, p. 771; *59*, p. 678; *60*, p. 716; *61*, p. 653; *62*, p. 532.

58. *Narkhoz: 58*, p. 771; *61*, p. 654.

59. *Strany sotsializma*, p. 101; *SSSR v tsifrakh*, p. 314; *Narkhoz: 63*, p. 539; *65*, p. 652; *67*, p. 739.

60. *Narkhoz 62*, p. 533.

61. *Narkhoz* (1956), p. 211.

62. *Narkhoz: 63*, p. 539; *64*, p. 646; *65*, p. 652; *67*, p. 739.

63. *Narkhoz RSFSR 64*, p. 414.

64. *Sovetskaia Estoniia*, pp. 103–4.

65. *Razvitie narodnogo khoziaistva Latviiskoi SSR*, pp. 266–67; *Sovetskaia Latvia*, pp. 271–72.

66. *Narkhoz Litovskoi SSR*, p. 177.

67. *Narkhoz Tadzhikskoi SSR 65*, p. 209.

68. *Narodne gospodarstvo URSR 1960*, pp. 413–14; id., *1964*, pp. 539–40.

been revised in subsequent volumes, although minor changes, usually of 1 percentage point, have been made in a few instances. No explanation has been given in these cases.

Other Statistics

In addition to price indexes, the statistical apparatus calculates *average prices* for more than 70 commodity groups, including flour, confectionery articles, macaroni, dairy products, wine, beer, other alcoholic beverages, nonalcoholic beverages, potatoes, fresh vegetables, canned vegetables, fresh fruits, livestock products, sugar, tea, and salt. These calculations show the average prices of a commodity in different types of retail outlets as well as the average price for different varieties of a given commodity (e.g., different types of wines). The statistical agencies at the oblast' level furnish data on average retail prices annually to the republic TsSU's, which in turn transmit reports to the USSR TsSU. The data are used in planning retail trade,[69] but are not published.

The program of price statistics also includes analysis of the *structure of retail prices*, in order to determine the relative importance of the various components from raw materials costs through trade markups and taxes.[70] This analysis shows the relationship between different types of prices (agricultural procurement, industrial wholesale, and retail), profitability, the importance and locus of taxes, and the financial relationships among various types of state enterprises. The information is used in deciding changes in prices and turnover taxes, as well as in determining whether production or marketing costs are excessive. The data for these studies come from wholesale and retail price lists; technical, bookkeeping, and statistical reports of industrial enterprises, procurement agencies, trade organizations, and ministries; and various calculations by planning agencies.

The first analysis of the structure of retail prices was done by the USSR TsSU in 1952 for granulated sugar, cigarettes, cotton textiles, potatoes, and vegetables; it is reported to have disclosed excessive procurement expenditures. In 1957–58, studies of the structure of retail prices for various goods were used to prepare new purchase prices for agricultural products. After the introduction of new purchase prices in 1958, the structure of retail prices of goods produced from livestock products was analyzed to determine the effects of these prices. During 1958–66, the USSR TsSU analyzed the structure of retail prices of bread, meat, eggs, milk, cottage cheese, butter, vegetable oil, granulated sugar, tea, potatoes, fresh vegetables, cigarettes, leather footwear, watches, bicycles,

69. Sadekov and Iakovlev, pp. 16–17, 36–48.
70. Stoliarov, 1969, pp. 160–78; Smirnova.

cameras, and wool, cotton, and linen fabrics. Concurrently, the republic TsSU's have analyzed the structure of retail prices of goods of which the respective republics are important producers—for example, sawn timber in the RSFSR, tea in Georgia, wine and furniture in the Ukraine, wool fabrics in Uzbekistan, and meat in Estonia. However, they have been criticized for failing to analyze the structure of prices on potatoes and vegetables which the union republics themselves set.

Although some calculations from these studies have appeared in various books and articles, no systematic series are published in the statistical yearbooks.

Comparison with U.S. Statistics

The U.S. counterpart to the Soviet statistical program on retail prices is the BLS Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI). The CPI is a cost-of-living index which attempts to measure changes in the prices of consumer expenditures of all types, including expenditures for food, clothing, furniture, household supplies, fuel, automobiles, houses, fees to doctors, rent, repair costs, and transportation fares.[71] The U.S. index is currently weighted by the pattern of consumer expenditures in 1960–61. In contrast, the Soviet index refers only to the price level of sales of the state and cooperative retail network (including public catering), and must be supplemented by other data to obtain a cost-of-living index.

Price data for the CPI are collected for approximately 400 items, chiefly by personal visits of reporters to a representative sample of nearly 18,000 stores; food prices are obtained monthly and other prices either monthly or quarterly. Soviet price data are obtained from official price lists quarterly for an undisclosed number of items. The BLS procedure provides for introducing higher-quality items and new commodities into the sample to represent a given expenditure class, while the Soviet index ignores new goods, quality changes, temporary prices, and price cuts on items not in demand or removed from production.

The formula for the CPI is of the Laspeyres type, based on constant weights derived from a survey of consumer expenditures. However, in practice the index is not calculated directly in relation to the base period, but rather by updating the previous monthly index.[72] Thus, it is not exactly equivalent to a true Laspeyres index, in which the weight base and the reference base are the same. The Soviet index, on the other hand, is of the Paasche type, using current weights for the commodity groups in comparing the current with the preceding period. However,

71. *Handbook of Methods*, pp. 69–90.
72. Details are given in *Consumer Price Index*, pp. 71–80.

although the Soviet index is constructed according to the Paasche procedure for commodity groups and for aggregations of them (such as food, nonfood, and total trade turnover), *intragroup* weights, which are not available from current sales data, are usually not those of the current period and may be left unchanged for a number of years.[73] The BLS revises the weights within expenditure classes of the CPI whenever it considers it necessary because of changes in the composition of consumer expenditures.[74]

The Soviet practice of linking year-to-year indexes to obtain series for longer periods may be criticized on the ground that the result is not a true Paasche index comparing the reference base year and the current year in terms of the weights of the current year. For example, index numbers for 1967 with 1940 as the reference base do not compare 1967 and 1940 prices for the expenditure pattern of 1967 as the Paasche approach requires (or for 1940 as the Laspeyres approach requires), but rather do so through the medium of the expenditure patterns of the many intervening years. The result therefore has no clear theoretic meaning.[75]

This criticism is especially relevant because of the present Soviet practice of showing the retail price indexes primarily with average 1940 prices as the reference base, and occasionally with 1950 prices as the base. In contrast, the CPI reference base of 1957–59 (established by the Bureau of the Budget) is not so remote from either the weights (1960–61) or the current prices.

In both countries, the retail price indexes are used to calculate changes in real wages and to deflate current-value magnitudes in the construction of the national accounts. In addition, the CPI is used in the United States as a key measure of inflationary pressure. The Soviet index is not very useful in this respect, because it refers to prices which are administratively set, often at levels which fail to balance supply and demand and are changed infrequently (and with a lag) in recognition of such imbalances. Finally, in the United States, but not in the USSR, retail price indexes are widely used in wage adjustments and collective bargaining negotiations.

Differences in publication policies correspond to the differences in the nature and uses of the indexes in the two countries. The CPI is first released at a monthly press conference, usually near the end of the month following that to which the data relate. Additional detail is furnished in a report about two weeks later, and quarterly and annual reports are

73. Stoliarov, 1969, pp. 117–18.
74. *Consumer Price Index*, pp. 23–24.
75. Allen, pp. 285–86.

also published. City indexes are published for standard metropolitan statistical areas with a population of 1,000,000 or more (in 1960). Actual average prices are published regularly only for food and fuel, on a monthly basis for a limited number of cities. In contrast, although quarterly indexes are calculated by both the USSR TsSU and the republic TsSU's, only the annual national indexes have been published regularly in the Soviet statistical yearbooks. Quarterly indexes are not released, and union republic statistics appear irregularly for those republics for which they are disclosed. Finally, average prices are not published.

In summary: the scope of the Soviet index is limited to sales of the retail trade network (including public catering). The sample cannot be fully evaluated for lack of information, but it appears that the major commodity groups are covered. However, the index fails to reflect properly the movement in the price level of these sales because of the various types of price changes which it omits. The practice of chaining year-to-year links together for long periods, in order to express index numbers in relation to 1940 or 1950, is questionable. These weaknesses—plus the fact that the prices to which the index refers are often not market-clearing prices—limit the usefulness of the index in calculating changes in real wages or real national product. Changes in inventories (or queues) and savings deposits are better measures of inflationary pressure than the index. Finally, although the publication program is more extensive than for other types of prices, only a small portion of the statistics compiled on retail prices are released outside the Soviet government.

Collective Farm Market Prices

Collective farm market (CFM) prices (*tseny kolkhoznogo rynka*) are determined by supply and demand in the individual CFM's, varying from market to market and from day to day in the same market. According to a survey in 1966,[76] there were 7,260 markets, of which 5,053 were in cities and urban settlements (including 960 in oblast', krai, and republic centers) and 2,207 in rural localities. Of the total, 3,883—primarily in the cities—were open daily, while most of those in rural areas operated only once a week.

Statistics on CFM sales and prices have been collected since the early 1930's by the TsSU Department of Trade Statistics.[77] The basic features of the present program date from 1934, when a sample of 113 cities was selected for the collection of data on quantities and prices, and prices alone were also recorded in 365 raion centers. The number of

76. Zaitseva and Pletneva.

77. The discussion that follows is based largely on Beliaevskii; Deriabin, pp. 343–49; and Karcz, "Quantitative Analysis," where more details may be found.

cities in the sample was increased to 158 in 1936 and 175 in 1939; the number of raion centers was expanded to 600 in 1935 and 800 in 1939. Forty-six commodities were covered. In addition, a special sample of 71 cities with a population over 100,000 was constructed to characterize CFM trade in the largest cities. From 1933 to 1939, statistical handbooks on CFM trade were issued annually, with data on quantities and prices for individual cities and oblast's, as well as the USSR as a whole. During World War II, the sample was sharply reduced and the quality of the data declined. After the war, a basic sample of 251 cities was adopted, although the series for 71 large cities was continued. A statistical handbook about CFM trade was published in 1947, but no data were systematically released thereafter until 1956, when the handbook of trade statistics appeared.[78] Since then, CFM statistics have been published in the statistical yearbooks.[79]

For the basic sample, data on the volume of sales of 72 products are gathered daily at all markets located in 251 cities according to a 1962 source[80] and in 264 cities according to two 1966 sources.[81] In contrast, price information is collected only once a month, on the 25th, in only one of the major markets (at several large markets in the big cities). It is claimed that markets are selected in such a way that the volume of sales of basic products in these markets constitutes not less than 75–80 percent of total sales of all markets in the city and that average prices on these markets characterize those prevailing throughout the city. Enumerators are instructed to record the actual prices at which transactions occur at the hours of greatest activity ("modal" prices), rather than simply prices sought or offered. Prices are to be collected for a specified type, grade, or quality of each commodity—usually that corresponding to Grade I in state trade. Prices received by collective farms and by individual sellers are recorded separately, on the ground that the former sometimes sell for less than the latter.[82] If prices are recorded in more than one market in the city, a simple arithmetic average is taken to obtain a single price for the city on that date. With two exceptions (potatoes and vegetables during the summer months), price quotations obtained in this way

78. *Sovetskaia torgovlia.*
79. Beliaevskii, pp. 116–21.
80. Ibid., p. 26.
81. Pletneva, p. 296; Riauzov, *Statistika*, p. 211. The series published in the statistical yearbooks refers to 251 cities, however. *Narkhoz 67*, p. 763. According to Beliaevskii (pp. 24–26) quantity data are collected for 72 products and price data for 73, including also sugar distributed to farmers involved in beet production and resold by them. Pletneva (p. 296) refers to 76 products, but it is possible that she counts as separate products some items listed by Beliaevskii as subproducts; for example, the 72-item list in the latter includes fresh cucumbers as item 28 and pickled cucumbers as item 28-a.
82. Katal'nikov, p. 136.

are combined into monthly average prices by simple averaging of the prices on the 25th of the current and the preceding month. That is, the June price is the unweighted average of the quotations for May 25 and June 25.[83]

In addition, the prices of 17 items are recorded monthly in one large market of each raion center on the Sunday (or other market day) closest to the 25th of the month, only for sales by collective farmers and individual sellers. Because no corresponding quantity data are collected, average oblast' and republic prices must be derived as unweighted averages of the raion prices.[84]

From these quantity and price data, monthly, quarterly, semiannual, and annual price indexes are reported to be calculated for individual goods, commodity groups, and all CFM trade. Price index numbers are computed according to the Paasche aggregative formula, with current-period quantities as weights. In contrast to the index of state retail prices, whose weights are the value of sales, in the CFM price index physical quantities are used for weights.[85] CFM price index numbers are usually computed in relation to the corresponding period of the preceding year. However, monthly and quarterly indexes are also computed in relation to the preceding period, and annual indexes are said to be calculated in relation to different base periods, depending upon the purpose.[86] Thus, it is not clear whether comparisons over long periods are made by chaining year-to-year index numbers or by direct comparisons of the prices weighted by the quantities of one of the years being compared. In addition, "territorial" indexes showing the relationship of prices for a given period in different areas are calculated, as well as indexes showing the relationship of CFM prices to state retail prices.[87]

The basic index series refers to 251 cities. In addition, indexes are calculated for 71 large cities. Finally, an index of "extrarural" (*vnederevenskii*) CFM prices for the USSR as a whole is constructed. The extrarural series is supposed to depict the movement of prices (and sales) in all cities, large and small, and also in rural localities (*sel'skie mestnosti*). It excludes sales by collective farms and collective farmers to each other, which are considered "intrarural." The basic series includes only sales to the population, while the extrarural series includes sales to consumer cooperatives. Sales on the CFM's of the 251 cities were reported to constitute the following percentage of total extrarural CFM sales in 1967: grain, 14; potatoes, 22; meat, 23; milk, 17; and eggs, 15. However, Soviet

83. *Price Statistics of the Federal Government*, pp. 300–302; Beliaevskii, pp. 26–28, 56–58.

84. *Price Statistics of the Federal Government*, p. 302; Beliaevskii, pp. 27–28, 58.

85. Beliaevskii, pp. 73–74.

86. Pletneva, pp. 304–5.

87. Stoliarov, 1969, pp. 20, 117.

sources do not disclose the precise method for proceeding from the basic sample to the extrarural series for the USSR as a whole. The only description available simply refers to the use of data from annual reports of collective farms about sales of their output, reports of consumer cooperatives about purchases of surpluses, and sample studies of family budgets of collective farmers and workers and employees.[88]

Price indexes and other statistics for the CFM are reported to be used by central and local authorities to assess the composition and development of CFM trade, its role in supplying the population with various agricultural products, and the relationship of supply and demand. They are also used in calculations of trade turnover, the balance of income and outlay of the population, and the marketable output of agriculture (Pletneva, p. 309).

While a variety of detailed indexes of CFM prices is calculated for these purposes, only a fraction of them has been published in the statistical handbooks. The most comprehensive series available is that for the sample of 251 cities with a 1950 reference base. Index numbers for 1958, 1960, and 1963–67 have been published for all commodities, including cattle and excluding cattle, bread products (and grains, flour, and groats separately), potatoes, vegetables (and cabbage and onions separately), fruits, vegetable oil, meat and meat products (and beef, pork, and poultry separately), milk and dairy products (and milk and butter separately), eggs, and cattle.[89] For the sample of 71 large cities, index numbers are available for more commodities, but only for 1950 and 1954–61, with a 1940 reference base.[90]

Series for extrarural CFM trade are available, with a 1940 reference base for total trade for 1950, 1954–62, and 1965–67, and for individual commodities and commodity groups for 1950 and 1954–62. Many revisions were made in the index numbers for individual commodities and commodity groups for the years 1955–56 and 1958–60.[91] Some of these changes were rather large (e.g., 23 percentage points for vegetables for 1959), but none was explained. However, these revisions may have influenced the decision to cease publication of commodity detail for the years after 1962. The extrarural series is available with a 1950 reference base for a smaller list of goods for the years 1951–58; all of the index numbers for 1955 (but not for 1956) were revised, again without explanation.[92]

88. *Narkhoz 67*, pp. 949–50.

89. *Narkhoz: 64*, p. 659; *65*, p. 667; *67*, p. 763.

90. *Sovetskaia torgovlia*, p. 183; *Narkhoz: 58*, p. 790; *59*, p. 710; *60*, p. 738; *61*, p. 666.

91. *Sovetskaia torgovlia*, p. 182; *Narkhoz: 56*, p. 237; *58*, p. 789; *59*, p. 709; *60*, p. 737; *61*, p. 665; *62*, p. 541; *67*, p. 762.

92. *Sovetskaia torgovlia*, p. 182; *Narkhoz 58*, p. 789.

Finally, regional index numbers of CFM prices have been released at various times. Of 39 republic statistical handbooks available to me, 16 had such data; of 20 oblast' statistical handbooks, seven included these index numbers; and this was also true of two of seven ASSR handbooks. The reference bases varied, but included 1955 and 1958 as well as 1940 and 1950. The commodity breakdown was generally less detailed than in the series released for the sample of 251 cities.

The CFM prices indexes have been criticized on various counts, by Soviet as well as Western authors. (1) There are often errors in the raw data, especially those for sales, which are collected by employees of the market administration rather than the local agency of the TsSU, which collects the price data.[93] (2) The practice of obtaining prices only for first-grade products overstates the value of trade turnover and does not necessarily depict movement of average prices for the same products.[94] (3) Prices should be collected oftener than once a month—preferably every Sunday, if necessary for a smaller group of commodities than the present list of 73.[95] (4) Monthly prices should not be calculated as simple averages but should be weighted by quantity data, which are available for this purpose.[96] (5) The monthly price data for raion centers are combined for oblast's and republics by unweighted averages. This introduces a serious bias because prices are significantly lower in smaller cities and towns. Therefore raion prices should be weighted. Because corresponding quantity data are not collected, some alternative weights should be used—such as the population of the raion centers, or perhaps quantities sold as determined by surveys every two or three years.[97] (6) The basic sample for 251 cities is not properly stratified. It includes mostly large cities, but it also contains some medium-sized and small cities. Thus, it does not accurately represent either large cities or the urban USSR as a whole. It cannot depict price movements in the latter reliably, because CFM prices are higher in large cities than smaller cities and towns, but seasonal fluctuations in supplies and prices are smaller in large cities.[98] (7) Soviet sources have not disclosed how the postwar series for 251 cities is compared with 1940, when the sample was much smaller. (8) Nor have they disclosed exactly how the series for all extrarural CFM trade is derived from the sample data. The description of the series mentions various statistical materials, but some of these

93. Beliaevskii, pp. 28–29.
94. Karcz, "Quantitative Analysis," pp. 319, 322.
95. Beliaevskii, pp. 28–29.
96. Ibid., p. 57.
97. Ibid., pp. 58–59.
98. Deriabin, pp. 346–47; Beliaevskii, pp. 35–49, 96.

materials, such as sample budgets of collective farmers and urban workers, are of questionable reliability.[99]

Thus, a careful evaluation of CFM price (and quantity) statistics leads to the conclusions that they are largely rough estimates subject to considerable error, that the data for prices are less reliable than those for sales, and that the larger the scope of the series (e.g., all "extrarural" vs. 251 cities) the less reliable it is likely to be.[100]

Consumer Cooperative Sales at Market Prices

A related program of price statistics is conducted for the sales by consumer cooperatives of products handled on commission for collective farms or purchased outright from peasants. The cooperatives' sales are at market prices determined by local supply and demand conditions. The prices are usually lower than CFM prices but higher than state retail prices for the same goods. For a sample of 102 cities, price indexes are computed for 23 commodity groups.[101] Prices of over 30 items are collected monthly (on the 25th) by city trade organizations, which transmit the information to agencies of the TsSU. The latter combine price and quantity data to calculate quarterly and annual indexes for the volume of sales, price movements, the relationship between consumer cooperative and CFM prices during a given period, and the relationship of consumer cooperative to state retail prices during a given period. Such indexes are computed for each of the 102 cities, on the average for all sample cities in a republic, and for the entire sample. In these computations, the quarterly prices for consumer cooperative sales are not weighted averages of the monthly figures; rather, either simple averages of the monthly prices, or the price (on the 25th day) of the middle month of the quarter are used. In all of the indexes, prices are weighted by quantities of the current period.[102]

Many of the criticisms of CFM statistics apply also to those for consumer cooperative sales at local market prices, because of the similarity in methods of choosing samples, collecting basic data, and constructing indexes. This in turn limits the validity of comparisons of consumer cooperative market prices with CFM and state retail prices.

Although detailed calculations are made for these purposes, few of the statistics have been published. Comparisons of consumer cooperative market prices with CFM prices and state retail prices for 13 commodity groups, for 1954–60 on a quarterly basis and for 1956–60 on an annual

99. Karcz, "Quantitative Analysis," pp. 320–21.
100. Chapman, p. 349; Karcz, "Quantitative Analysis," p. 321.
101. Riauzov and Titel'baum, p. 198.
102. Sadekov and Iakovlev, pp. 48–55.

basis,[103] appeared in the national statistical yearbooks,[104] but the publication of national series was then discontinued. However, index numbers comparing consumer cooperative market prices with state retail prices, for a sample of 65 cities, have been published for the RSFSR through 1965 for a slightly larger number of commodities, with quarterly data for 1956–57, quarterly and annual data for 1957–62, and annual data only for 1963–65.[105] The only other republic series I have been able to locate is for the Ukraine in 1959 and 1960. For a sample of 18 cities, it compares consumer cooperative prices with CFM prices for 12 commodities on a quarterly and annual basis.[106]

Other Price Statistics

Two other programs of price statistics may be mentioned briefly. Although they are currently of limited importance, they are of interest because they illustrate some aspects of the central observation of decentralized price-setting. This experience will be relevant if the Soviet Government should decide in the future to alter the present highly centralized scheme of price formation, by the devolution of authority for price-fixing geographically to republic and local bodies or hierarchically to the ministries, "firmy," or even enterprises.

Observation of Prices Set in the Union Republics

This program covers changes in permanent wholesale prices, agricultural procurement prices, retail prices, and rates for services which are set by union republic, ASSR, krai, oblast', and city bodies. The republic and USSR TsSU's collect data on such prices, prepare price series for specific items, construct indexes, analyze the reasons for changes, and furnish reports to republic and national agencies on the level and movement of these prices and their influence on the profitability of enterprises.[107]

In addition, this statistical program performs a control function by detecting violations in price-setting practice. The most widespread violation involves selling output at unauthorized prices or raising prices above authorized levels, such as the sale of low-quality goods at the prices for high-quality items, the continued sale at temporary prices of goods for

103. The sample included 102 cities for 1954–58 and 101 cities for 1959–60.

104. *Sovetskaia torgovlia*, pp. 133–34. *Narkhoz: 58*, pp. 773–74; *59*, pp. 680–81; *60*, pp. 718–19.

105. *Sovetskaia torgovlia v RSFSR*, p. 92. *Narkhoz RSFSR: 58*, p. 408; *59*, p. 478; *60*, p. 449; *61*, p. 497; *62*, p. 471; *63*, p. 454; *64*, p. 419; *65*, p. 450.

106. *Narodne gospodarstvo Ukrains'koi RSR v 1960*, p. 415.

107. Stoliarov, 1969, pp. 143–44.

which lower permanent prices have been established, and unauthorized surcharges for "overhead expenses" or excessive freight charges. Also, some oblast' governments and enterprises set prices for goods which are in the jurisdiction of the USSR or republic price-setting agencies.[108]

This statistical program has been criticized for neglecting all types of temporary prices.[109] It covers only permanent wholesale prices on comparable production, excluding prices on new goods and changes in prices of existing goods when quality changes or prices are reduced because of a fall in demand. When the statistical program was established, coverage of these prices was omitted because it was believed that it would overburden the statistical agencies, but subsequent studies have shown that the work could be handled on a sample basis.[110] Nevertheless, the current program still excludes these prices.[111]

Sample Surveys of Specific Problems of Price Formation

The TsSU has conducted such surveys to study the use of wholesale prices in subcontracting (1959), the use of temporary and one-time wholesale prices on the output of machine-building and metalworking (1960), the operation of the fund for mastering new technology (1962), and the profitability to producers and advantages to users of new types of raw materials (1963). The results of these surveys are reported to have been used in modifying price-setting practices.[112]

General Evaluation

On the basis of the preceding detailed analysis of individual statistical series, it is now possible to present a brief general evaluation of the Soviet program of price statistics, including its coverage, data collection procedures, statistical methodology, speed of reporting, and publication policy.

Coverage

The Soviet program of price statistics is broad, encompassing most kinds of prices. However, there are some important omissions.

In regard to *scope*, the indexes for industrial wholesale prices and state retail prices are confined to "permanent" prices and exclude so-called "temporary" prices, which may be in effect for a number of years. Because a considerable part of the output of some commodity groups is

108. Ibid., pp. 146–47.
109. Deriabin, pp. 7–10.
110. Stoliarov, 1963, pp. 131–36.
111. Stoliarov, 1969, p. 149.
112. Ibid., pp. 150–58.

sold at "temporary" prices, the indexes understate price increases. The most striking case is that of machine-building and metalworking, where the official price index shows a decline during a period when average prices were rising.

It appears that the program of industrial wholesale price indexes is still concerned almost exclusively with indexes for output prices, neglecting indexes for input prices. The only reported example of the latter is the index for the prices of industrial inputs purchased by agriculture. Indexes of input prices are needed for various purposes, for example to analyze changes in value-added or net product. Presumably the weights for such indexes are now available from the extensive Soviet work on input-output tables.

Although the data are available to calculate separate price indexes for procurements from collective farms and from private plots, only a single index is constructed for the two combined. The program of price statistics also neglects the prices of services and of intrarural CFM sales.

For some of the series, the *commodity detail* is adequate for analytical purposes, while for others it is not. Individual series for 27 commodities for agricultural procurement prices and for 73 commodities for CFM prices seem sufficient. Although there are 961 items in the sample for indexes of industrial wholesale prices, it is reported only that index numbers are calculated for ten branches of heavy industry and two branches of light industry. It is not clear whether indexes are also computed for commodity groups within the various branches. In the case of state retail prices, indexes are computed for fairly detailed groups, but one Soviet source criticizes the insufficient work on statistics of prices of public catering.[113]

The *geographical detail* of the price statistics corresponds to the extent of regional variation in the different types of prices. For industrial wholesale prices, the principal series are for the USSR as a whole, but supplementary statistics are collected on prices fixed in the union republics. For agricultural procurement prices and state retail prices, statistics are compiled on the republic as well as the national level. In the case of CFM statistics, data on prices are collected at the raion level.

The *periodicity* of the price statistics also corresponds in most cases to the frequency with which prices change. The statistics for industrial wholesale prices are collected annually (semiannually in the case of average prices for light industry), which is adequate in view of the rigidity of these prices. Quarterly (in addition to annual) statistics for state retail and CFM prices can depict seasonal variations. However, for agricultural

113. Stoliarov, 1969, p. 159.

procurement prices, only annual data are available; in addition, seasonal price information is needed for cattle, potatoes, and vegetables.

The *historical coverage* of the statistics is incomplete because of the interruption in the statistical program during the Stalin era. While data are available for state retail and CFM prices since the 1930's, there are gaps in the statistics for industrial wholesale prices before 1948 and in those for agricultural procurement prices before 1940. The index for state farm prices apparently begins in 1958.

Sampling

Too little has been disclosed about Soviet sampling practices to permit an evaluation, except in the case of CFM price statistics. The index for industrial wholesale prices is said to be based on a sample of 961 commodities which accounted for 56 percent of the value of marketable output in 1961, but no further details are available. The earlier index for agricultural procurement prices was reported to be based on a sample of 27 commodities representing 83 percent of the value of procurements in 1956. This appears to be adequate, but it has not been disclosed if the subsequent index, weighted by average procurements in 1958–62, was derived from the same sample. No details are available on the sample for the indexes of state retail prices. For CFM prices, it has been noted that the basic sample for 251 cities is not properly stratified, while the details of the derivation of the series for all "extrarural" CFM trade have not been divulged. Thus, while the limited evidence is mixed, too little is known to permit a generalization about the soundness of sampling procedures.

Data Collection and Processing

As noted, the basic data for CFM price statistics are collected by market enumerators, while the data for other types of price statistics come from official price lists and various types of reports submitted by enterprises and their supervising agencies. In both cases, errors in the collection of data have been acknowledged by Soviet sources.

In the case of CFM statistics of prices (and the quantities used to weight them), it is admitted that poorly trained or indifferent personnel sometimes report incorrectly.[114]

It has been stated that errors often occur in the semiannual and annual reports of enterprises about the quantity, value, and profitability of industrial output, from which average prices and the structure of prices are

114. Beliaevskii, pp. 28–29.

calculated. A study for 1961–62 showed that the most common errors were incorrect quantities for marketable output and sales; mistakes in the unit of measure (e.g., thousands of tons instead of tons); incorrect calculation of averages per unit of output; wrong computations of trade margins and turnover taxes; and the failure to use the designation of the article and the unit of measure specified in the appropriate nomenclature. These errors originated in the enterprise but were often not detected by either the regional economic council (*sovnarkhoz*) or the oblast statistical administration, which put the incorrect figures on punched cards and transmitted them to the republic and national TsSU's.[115] Similar errors presumably occur in statistics of retail trade turnover, reports on agricultural procurements, and other data used to derive average prices and price indexes. Thus, the various price statistics are subject to distortion from intentional or unintentional errors in underlying data initially reported for other purposes, such as the measurement of plan fulfillment.

Index Construction

Both the Laspeyres and the Paasche formulas are used in Soviet price statistics—the former for the indexes of industrial wholesale prices and agricultural procurement prices and the latter for the indexes of state retail prices and CFM prices.

The Paasche formula reflects both changes in prices and changes in the pattern of expenditures, while the Laspeyres formula aims only to reflect price changes for a fixed market basket. The Laspeyres index number for average price changes between two dates will usually be higher than the corresponding Paasche index number, because the latter recognizes any shift in consumer expenditures from relatively more expensive to relatively less expensive goods when prices change at different rates. It is generally agreed that the Laspeyres index number overstates, and the Paasche index number understates, the "true" change in the cost of living.[116]

The Laspeyres formula is commonly used in market-oriented economies when indexes must be calculated frequently, because it is usually considered impractical to calculate new weights for each current period—e.g., through monthly or even annual surveys of consumer expenditures.[117]

115. Stoliarov, 1963, pp. 123–27.

116. Allen, pp. 289–90; Karmel; Chapman, pp. 30–31.

117. A comparison of consumer price indexes for fourteen Western industrialized countries reveals that fixed weights were used in twelve (the United States, Austria, Belgium, Canada, Denmark, France, West Germany, Italy, Japan, the Netherlands, Norway, and Switzerland), while only two (Sweden and the United Kingdom) used current weights.

The Soviet literature explains the choice of the Paasche formula for the indexes of state retail and CFM prices on two grounds. First, in the USSR current-period weights are available from sales statistics, whereas they are usually unavailable in capitalist countries because of "commercial secrecy."[118] Second, the use of current-period weights makes it possible to calculate the absolute and relative effects of price changes, in terms of what current purchases actually cost at the new prices versus what the same quantities would have cost at the old prices. Current weights should be used for this purpose as it is the current basket of goods to which the saving, in the case of a price reduction, applies. In this way, the "saving to the population" from annual retail price cuts from 1948 to 1954 was calculated.[119]

The use of the Paasche formula in Soviet indexes of consumer prices yields—compared both with the Laspeyres index number and the "true" change—a smaller increase when prices rise and a larger decrease when prices fall. Although this is a politically convenient result, from a theoretic viewpoint the Paasche formula is as respectable as the Laspeyres formula (though not more so).

For the most part, the weights themselves appear to be appropriate. In indexes of industrial wholesale prices, they are quantities of marketable output in 1961. The annual average of quantities procured over a five-year period (perhaps still 1958–62) is used for the index of agricultural procurement prices. In the indexes of state retail prices, the value of sales in the current period is employed for intergroup weights, but various other data are used for intragroup weights. As the latter do not usually refer to the current period, the result differs from a strictly defined Paasche index. The greatest deficiency in weighting, however, concerns the index of CFM prices. In the basic sample for 251 cities, monthly prices are the simple average of prices on the 25th of the current and preceding months. In the supplementary series for prices of 17 commodities, a simple average of raion prices is taken to obtain oblast and republic figures. In the former instance, the corresponding quantity data are available for weights but weighted averages are not calculated, in order to reduce the amount of computational work.[120] In the latter case, corresponding quantity data are not collected, but alternative weights are available.

The Soviet practice of linking different series in order to show index

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Capdevielle, "Consumer Price Trends." When the Laspeyres formula is used, it is important to revise the weights frequently, for example, at least every ten years, and preferably more often. *Price Statistics of the Federal Government*, p. 32.

118. Veitsman et al., pp. 209–10.

119. Riauzov, *Statistika*, pp. 119–20.

120. Beliaevskii, p. 57.

numbers for recent periods with remote reference bases is questionable. The 1949 reference base for industrial wholesale prices may be justified in order to show the effect of successive price revisions since World War II, although 1948 prices would seem more appropriate for this purpose. The 1952 reference base for the prices of procurements from collective farms and private plots is reasonable in order to depict the movement of agricultural prices since the Stalin era. In contrast, the remote base of 1940 for state retail price indexes is puzzling, particularly because the index numbers are obtained by chaining together year-to-year indexes with current weights. A 1950 reference base has sometimes been used, although in order to show the postwar trend it would be more appropriate to use the fourth quarter of 1947, before the annual reductions in retail prices of 1948–54. Certainly, the series should also be presented with a more recent base, such as 1954, or 1961. The same criticisms apply to the indexes of CFM prices, most commonly presented with a 1950 reference base for the sample of 251 cities and a 1940 base for the "extrarural" series.

Speed of Reporting

Very little has been published about the reporting schedules for the various price statistics, or whether these schedules are met. A Soviet source disclosed in 1963 that annual reports on industrial wholesale prices and agricultural procurement prices reached the republic and national TsSU's in June or July of the year following the year covered. The TsSU's in turn did not perform their calculations and issue statistical handbooks (for internal government use) until August or September. However, Gosplan, the Ministry of Finance, and other agencies needed this information by May or June. The delay was attributed chiefly to the lack of punched card and tabulating equipment at the lower levels of the statistical apparatus.[121] However, at a conference on price statistics in 1964, representatives of these levels complained that they did not receive the necessary price lists and nomenclature handbooks in ample time or in sufficient quantity.[122]

According to the USSR TsSU plan for price statistics in 1965, it was not scheduled to complete work on 1964 prices for the following series until the dates indicated: indexes of CFM prices for 251 cities, February 25; indexes of state and cooperative retail prices, May 5; average wholesale prices, August 20; indexes of agricultural procurement prices, September 1; indexes of industrial wholesale prices, October 1; and struc-

121. Stoliarov, 1963, pp. 120–23.
122. "Soveshchanie rabotnikov," pp. 69–70.

ture of retail prices, December 15.[123] Although more recent detailed information is not available, lags in the preparation of statistical materials were listed as one of the major shortcomings in price statistics by an authoritative Soviet source in 1969.[124]

Publication

As shown in detail in the preceding sections, only a fraction of the Soviet price statistics compiled for official use are published regularly in statistical yearbooks. The most conspicuous omissions are noted below. Presumably, much of the unpublished data is made available to a restricted group of official users through "internal" reports of limited circulation.

In regard to *industrial wholesale prices,* the index numbers for the prices of output of nonferrous metallurgy have never been published. Also, no indexes for commodity groups within the other branches have been disclosed. The results of calculations of average prices are not revealed, although some aggregative statistics on the structure of prices have been published.

The index of *agricultural procurement prices* is not included in the statistical yearbooks. The series in the last two editions of Stoliarov's book (1963, p. 106; 1969, p. 121) condense the commodity groups, concealing important detail. Such detail is lacking altogether in his series for state farm delivery prices (1969, p. 122). Finally, although the union republics TsSU's are reported to compile statistics of agricultural procurement prices, no republic series has been published.

The following statistics of *state retail prices* are not published: quarterly indexes, average prices, and the structure of prices. Only a few of the price index numbers for the republics have been released.

In the case of *CFM price statistics* for the sample of 251 cities, annual index numbers are published for less than one-fourth of the commodities for which they are regularly computed, and quarterly index numbers are not released. No commodity detail has been disclosed since 1962 for the "extrarural" series for the USSR as a whole. The various republic and local series are published irregularly and incompletely.

No explicit policy for the revision of published price statistics has been announced. Corrections, sometimes large, have been made from time to time in various series, but these changes have been neither acknowledged nor explained.

123. *Plan staticheskikh rabot,* pp. 205–6, 256–57.
124. Stoliarov, 1969, p. 159.

Conclusions

As noted in preceding sections, there are substantial differences between the USSR and market-oriented economies like the United States in both the nature of the prices themselves and the uses of price statistics. These differences in turn explain why the compilation as well as the publication of price statistics is much less developed in the USSR than in the United States.

Price statistics probably have a relatively low priority in the hierarchy of Soviet statistical programs[125] because, for the most part, what they attempt to measure is not unknown or variable in the same sense as statistics of industrial output or national income. Industrial wholesale, agricultural procurement, and state retail prices are set by Soviet government agencies, which revise these prices infrequently. Furthermore, industrial wholesale prices, which have little influence on resource allocation, are commonly fixed below the level which would equate supply and demand. In many instances, state retail prices also are set below the market-clearing level, as shown by empty shelves and queues. Hence, not only are price statistics of little relevance to the key issue of the degree of plan fulfillment; with the exception of CFM price statistics, they also are of little help in measuring inflationary pressure. Rather, the various price statistics are used primarily in planning and statistical work for calculating changes in output, sales, and inventories in real terms and for analyzing financial flows and relationships.

Although the Soviet program of price statistics is broad, there are a number of gaps in scope, commodity detail, and historical coverage. A thorough evaluation of the methodology underlying these statistics is not possible because so little information has been disclosed in Soviet sources. It is known whether the Laspeyres or Paasche formula is used in constructing a given index, but little has been revealed about the samples for the various indexes—with the exception of the sample for the basic index for CFM statistics, which has been criticized as unrepresentative. The weights used in the indexes generally appear to be appropriate, although the practice of linking index numbers to remote reference bases is questionable. As might be expected in any large statistical program, errors in data collection and processing have been reported; however, to some extent these errors may occur intentionally because the data are also used to measure plan fulfillment, upon which bonuses depend. It appears that the lag in the preparation of price statistics limits their usefulness to planning and control agencies.

125. It is interesting to note that the section on price statistics appears toward the end of the *Plan* for the USSR TsSU in 1965. The order in which topics and items are listed in Soviet statistical materials often corresponds to their relative priority.

The Soviet Government follows a highly selective publication policy in the field of price statistics, releasing only a small portion of the statistics compiled for official use. There is no evidence of "falsification"—i.e., of intentional misstatement by the TsSU—in the published statistics. However, some of these statistics are less than completely reliable, in the sense that they do not depict accurately the situation they purport to describe. The causes include a narrow definition of the scope of a series, errors in reporting and/or processing data, deficiencies in sampling and weighting which impart bias, and selection of misleading reference bases. Various instances have been noted in this paper. Thus, although the published official series are the only comprehensive statistics of Soviet prices available to independent scholars, these series should be used with caution and a full awareness both of their limitations and of our limited knowledge about their derivation.[126]

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17

Raymond P. Powell

Monetary Statistics

Availability and Quality of the Data

To anyone not already familiar with the fact, the most startling observation to be made about Soviet monetary statistics is how fragmentary they are. Indeed, it is doubtful whether any other area of the economy, not closely related to military or security affairs, has been treated by the authorities with equal secretiveness. The rate of release of information has over the long run, moreover, tended to diminish rather than increase. It will serve to illustrate this assertion to trace out the history of the release of balance-sheet data for Gosbank, the State Bank. This, as will appear, is the dominant monetary institution of the system.

Beginning in the mid-1920's, Gosbank published in various sources quite detailed and well-annotated balance sheets, of which the most useful is a *monthly* series released in a journal it itself published—in English.[1] This series ceased as of 1 May 1932, since which date no Soviet source has regularly or periodically published full Gosbank accounts. In an action which is extraordinary for any kind of Soviet statistics, the Bank in 1938 released in a League of Nations publication[2] its balance sheets, as of 1 January, for the years 1932–37. While these are not detailed, they are sufficient, in combination with material appearing in internal publications, to permit the reconstruction in fair detail of the Bank's accounts to the beginning of 1937. Beyond that date, no complete balance sheet has appeared anywhere. Absolute totals—as against increments or percentages of one sort or another—have not been reported since 1937 for currency in circulation, since 1936 for the Budget's deposit account at Gosbank, since 1939 for the Bank's total assets and liabilities.

Data on Gosbank operations continued to appear through the late 1930's, but in fragments scattered through journals, textbooks, monographs, and so on. Like most other statistics, the flow of monetary statistics was stopped almost entirely during World War II and remained shut off until after Stalin's death. Data, both current and retrospective,

1. *Monthly Survey*, subsequently *Economic Survey*.
2. League of Nations, *Money and Banking 1937/38* (Geneva, 1938), 2:183.

began to be released again in significant quantities by 1957,[3] but the flow was severely constricted then and has remained so since. Neither Gosbank sources nor TsSU publications report systematically more than loans, among bank assets, and selected categories of deposits, among bank liabilities. Both the prewar and postwar data can be extended somewhat by the use of reported percentage changes and percentage distributions, and this is done for parts of the calculations cited below. The procedure however, is a risky one.

Presumably, the Head Office of Gosbank and the Soviet central authorities in general have access to reasonably complete and accurate monetary data. The basic operations of Gosbank as of other financial institutions consist, after all, of the entering of numbers in accounts. When assembled and suitably processed, these themselves constitute monetary statistics. Volumes describing Gosbank accounting and statistical practices, published from time to time,[4] suggest that data are compiled with the system and care which one expects of a banking institution. This is not to say that errors never occur in the initial compilation of monetary data. Gosbank is a large and diffuse organization, consisting as of a recent date of over 4,000 separate establishments (other than savings banks) and employing 150,000 persons. Particularly in its earlier years, it lacked business machines and skilled personnel. In periods as chaotic as the Credit Reform of 1930–31 and the evacuation phase of World War II, its records doubtless became disordered and inaccurate. But, one would judge, there is not in monetary statistics anything like the room for or the motivation to the distortion of primary data that there is, say, in statistics of industrial or agricultural output.

The presumption that the data are reliable at the point of original collection is not sufficient grounds, of course, for confidence in the monetary statistics which are published. What a wholly balanced and judicious statement about the reliability of the latter would be is hard to decide, and it may be wisest simply to treat the issue as unsettled. Certainly the published data are not, at the one extreme, the product of unconstrained and fanciful fabrication, nor, at the other, can they safely be interpreted as the plain and unambiguous truth. The truth they contain often looks to be partial, and they now and then come dangerously close to outright falsification.

3. Collected data have been published chiefly in Gosbank commemorative volumes: *Gosudarstvennyi bank SSSR: kratkii ocherk k sorokaletiiu Oktiabria* (Moscow, 1957); *Gosudarstvennyi bank SSSR k XXII s"ezdu KPSS* (Moscow, 1961); *Kreditno-denezhnaia sistema SSSR* (Moscow, 1967). Monetary data have been included in *Narkhoz* yearbooks since that for 1958. Early but very fragmentary data are published in the account of Gosbank's annual report which appears about midyear in the Bank's present journal, *Den'gi i kredit*, in the section entitled "V pravlenii Gosudarstvennogo banka SSSR."

4. See for example N. Riausov and A. Tertus, *Bankovskaia statistika* (Moscow, 1961).

A pervasive difficulty with the published statistics, despite their limited volume, is that numbers published for the same category and date and purportedly for the same coverage are frequently inconsistent. To cite an extreme example, the demand deposits at Gosbank of enterprises other than collective farms on 1 January 1933 are reported variously as 375.1, 400.2, 403.7, and 535.3 million rubles, with a range from lowest to highest of over 40 percent. In addition, coverage is often not specified, and reference dates are sometimes obscure. Also, to an exceptional degree even among Soviet authors, those writing on money seem to be prone to computational errors, mistranscriptions, or failures to correct errors in proof (two authors of otherwise important sources, M. S. Atlas and I. I. Konnik, are particularly trying on this score). Anyone who, in the late 1940's and early 1950's, before the release of the 1956 statistical handbook, worked on Soviet physical output data would still find a familiar aspect in the available monetary statistics: they are a jumbled, incomplete, and badly cut jigsaw puzzle.

Upon investigation, some of the inconsistencies can be explained by differences in coverage and classification. Some are the result of efforts by Soviet writers to standardize, as it were, data for the Bank drawn from periods over which the scope of its operations changed. Some are the result of a source familiar from other Soviet statistics: the difference between preliminary and more or less final figures. For example, short-term loans outstanding on 1 January 1940 were reported as 4,856 million rubles in "preliminary estimates," as 4,794 million in "operating-statistical reports," and, most reliably, as 4,795 million in "bookkeeping balance sheets."[5] At least in the pre-1937 period, however, preliminary and final data differ from one another for more consequential reasons than reporting error. Figures described as from "preliminary telegraphed balance sheets" reflect, in principle, the Bank's accounts as they in fact stood on the indicated date. More nearly final figures, such as those from the "summary annual report," reflect those accounts after they have, in some degree, been "reconciled and closed." The latter procedure consists of the carrying forward to the accounts to which they are payable of transactions which are in process on the accounting date, e.g., those appearing as transit items. Whether, for any particular figure, this procedure has been followed and to what extent is often unclear. While the conceptually relevant accounts would appear to be those before closing, and this is the intended character of the data cited below, the intention may not be realized.

In handling other Soviet statistics, our chief test of reliability has been their internal consistency. For monetary data, this is primarily a question

5. See A. Proselkov, *Den'gi i kredit,* 1940, no. 1, p. 9 n.

of the equality of bank assets and liabilities, which, at best, is a less severe test than those that proved possible, for example, with income and product data. Moreover, beyond the prewar years we have so little information on total assets and liabilities and data for so many components are lacking that even this test loses most of its force. Another consistency test is conceivable, between the Budget's accounts and the Bank's accounts, one reporting annual budgetary surpluses and the other changes in the Budget's deposits. This test is considered more fully below, but it may be said here that the outcome is not reassuring. If a charge of falsification can fairly be brought against any Soviet statistics, it may be most sustainable against reported budget surpluses.

Abram Bergson[6] once suggested that the Soviet practice of withholding data provided a certain ground for confidence in their published data, since withholding gave the authorities an alternative to falsification. In the case of monetary statistics, however, it is hard not to be made suspicious by official secretiveness, since the numbers withheld would seem to be innocuous. It is possible, of course, that the authorities withhold numbers simply because they regard them as technical and of no particular interest to themselves or to the Soviet public. This possibility is supported by the fact that the authorities have regularly and fully released data on deposits of individuals at the savings banks, which, they argue, reflect the well-being of the deposit holders. They have similarly released data for collective-farm deposits at Gosbank, often with an exhortation to the farmers to increase those accounts. There may be support for this possibility also in the fact that the considerable Gosbank data for the years to 1937 were released in English-language sources and, hence, were obviously intended for external readers. The same external objective may explain the recent release, noted below, of relatively complete accounts for the Bank for Foreign Trade.

On the other hand, the motivation for the withholding may be the opposite one, that the data would be of *too much* interest to the Soviet public. Certainly at any time after the 1947 currency conversion, the release of figures for currency in circulation could well have set off speculation on a further conversion. There may also be a few skeletons in the statistical closet, not necessarily discreditable to the regime but at which an unsophisticated public might look askance. The capital gains of the Bank from the 1947 conversion may be an illustration. That a deliberately selective policy of withholding data is operative is implied by the fact that Soviet writers on monetary affairs have, for the past ten years or more, indicated in their citations that they have access to the relevant

6. A. Bergson, "Reliability and Usability of Soviet Statistics: A Summary Appraisal," *American Statistician* 7, no. 3 (June–July 1953): 19–23.

state archives, yet they have consistently managed not to violate the blackout of whole areas of information.

Whatever its motivation, official secrecy leaves us without enough monetary data to check satisfactorily their internal consistency and, for that reason if not others, with little assurance that the fragments we have are reliable.

Plan of the Paper

In part no doubt because the data are fragmentary, but in part also because most of us directed our attention first to the real aspects of the Soviet economy, no extensive Western effort to assemble and systematize Soviet monetary statistics has yet been published—there is no earlier story to be brought up to date.[7] Perhaps the most useful thing that can be done here, therefore, is to provide a sort of guide through the existing data, indicating broadly, for various categories of accounts, what is available and what its characteristics are. To this end, illustrative statistics are presented below, with a commentary, for selected dates beginning from 1928. Since Gosbank is the chief actor in the story, its accounts are examined most closely, its assets and liabilities being taken separately (the Budget, as an emitter of currency, is appended to this discussion). There follows a more limited survey of data for the savings banks, the banks for long-term investment, and the Bank for Foreign Trade. Inasmuch as the banking institutions constitute the money suppliers in the system, there is a separate but brief discussion of data—or additional data—that bear on the behavior of moneyholders.

To assemble all available monetary statistics, for all years since 1928, would be a larger undertaking than is appropriate to the immediate purpose. The particular years selected are spread through time and fit a fairly conventional historical periodization, but they are chosen also as years for which data are relatively abundant. No year within the period of the Credit Reform is included, although the Reform is, after the hyperinflation of the early 1920's, the most dramatic monetary incident in Soviet history and one which largely conditioned the regime's attitude toward its monetary problems subsequently. Data for the period, however, raise extraordinary complications, and it seems better to leave

7. This is not to overlook the contributions of Western research in the field: e.g., A. Z. Arnold, *Banks, Credit, and Money in Soviet Russia* (New York, 1937); G. Grossman, "Union of Soviet Socialist Republics," in *Banking Systems*, ed. B. H. Beckhart (New York, 1954), pp. 732–68; Ministère des Finances, *Statistiques et études financières, supplément, Finances comparées*, no. 23, "U.R.S.S." (Paris, 1954), pp. 340–416; G. Menz, *Das Sowjetische Bankensystem* (Berlin, 1963); and G. Garvy, *Money, Banking and Credit in Eastern Europe* (New York, 1966). These, however, are primarily institutional and historical.

them for a separate discussion. Wartime years are omitted, principally because data are scarce. Also for lack of data, series are not, generally, brought more nearly up to date than 1 January 1967, which means that the effects—apparently limited—of the current economic reform are not much considered. Figures are shown only for 1 January which, since the early 1930's, has been the only date for which they were, other than occasionally, reported.

The sources of data compiled in the tables are given, although there is no attempt to explain at all fully the basis of choice among alternative figures. For numbers referred to in the text and statements on the availability in general of data, sources have, for brevity, been largely omitted. In the tables, estimates are distinguished from reported figures, but the latter are interpreted to include anything that can be derived by arithmetic manipulation of published information—e.g., by applying a percentage increase to an absolute base. For data of all kinds, risks of misidentification or misinterpretation are large. The tabulations shown here are tentative and subject, on the release or discovery of new data or on further thought, to substantial revision.

Figures are expressed throughout in new, post-1961, rubles. One new ruble equals ten old rubles.

Gosbank Assets

Short-Term Loans

Gosbank's principle activity (Table 17.1) since its creation, accounting typically for something like 80 percent of its total assets, has been the granting of short-term loans to enterprises. These are predominantly state enterprises, but include cooperatives and collective farms and, insignificantly and in the late 1920's, a few private borrowers. Figures for total short-term loans are available for all years, including the war years, and they leave no great or impenetrable mystery about the behavior of total loans over time. However, for almost any given date, more than one total figure can be cited, and the discrepancies are not insignificant if precision is called for.

For the years of the 1930–31 Credit Reform, to touch briefly on that period, total loans are reported generally on a *conto corrento* basis, that is, as loans net of the deposits of borrowing clients. Figures for loans gross of deposits, however, also appear. The effects of the Reform are further reflected in quite widely divergent figures for 1 January 1932. These differences seem to be matched by differences in the opposite direction in the Bank's holding of "bonds of the Bank for Long-Term Investment," which were essentially government bonds, into which part of the short-term loans outstanding at the end of the Reform were con-

verted. Differences in the loan figures, thus, are evidently due to differences in the assumed completeness of the conversion. A more recent puzzle is that loan totals, for certain benchmark years—1941, 1946, 1951—published after 1959, are larger than those published before.[8] The discrepancy is trivial in 1941 but substantial (13 and 2 percent of the smaller figure) in the two later years. A possible explanation, but not one that is clearly correct, is that the later sources have attributed to Gosbank certain short-term loans issued by long-term banks before the banking reorganizations of the 1950's (see below).

The relative openness of the authorities with respect to Gosbank's lending operations is expressed also in the availability of a great volume of data which, in various dimensions, describe those operations. These are sufficient to trace out the history of what could be called the Bank's lending policy. They contain also a part of the history of investment finance in the economy. As with the total loan data, however, it is easier to establish broad truths than to delineate the characteristics of bank lending with precision.

Data are available, for example, for all peacetime years, on the distribution of short-term loans among sectors. What these establish unmistakably is that Gosbank has been primarily a source of finance to sectors producing and distributing consumer goods—agriculture, procurement, light industry, trade—and only secondarily to heavy industry and related sectors. Efforts to increase the dependence of heavy industry on bank financing have been made since the late 1930's, but their results have, at least until the past year or two, been modest and gradual. When, however, one undertakes to determine precisely how the sectoral distribution of loans has changed over time, one encounters difficulties which are large and, in part, probably inherent in the unavoidable arbitrariness of sector classifications.

To begin with, pre-Reform data are not fully comparable with post-Reform, because in the earlier period borrowers from the Bank, chiefly industrial, were themselves large lenders to their customers, chiefly trade enterprises: the abolition of "commercial credit" was a principal objective of the Reform. For the post-Reform 1930's, innumerable sectoral distributions are available, which appear to differ from one another because, among other reasons, of changes in the administrative organization of industry and other sectors and because of efforts to standardize the data against the effects of such changes. Related to this may be the omission of defense industry from loans to heavy industry after the administrative separation of the former in 1936. And there are

8. Compare *Kreditno-denezhnaia sistema SSSR*, (Moscow, 1967), p. 311, with *Gosudarstvennyi bank SSSR: kratkii ocherk k sorokaletiiu Oktiabria*, (Moscow, 1957), p. 243.

Table 17.1. Balance sheets of the State Bank, 1928–67; 1 January, except 1 October 1928; billion rubles

	Assets	*1928*	*1933*	*1937*	*1940*	*1946*	*1951*	*1956*	*1961*	*1967*	
1	Short-term loans to enterprises	.325	1.045	3.482	4.80	6.70	16.67	19.94	41.19	72.16	1
2	Long-term loans to enterprises and to individuals	.025	na	na	na	na	na	na	2.95	6.33	2
3	Government bonds	.028	.597	.614	0*	–	–			–	3
4	Precious metals and foreign exchange	.029	.084	.222		–	–			–	4
5	Cash	.005	.027	.648	.96*	–	–	4.56	5.86	–	5
6	Sundry assets	.025	.464			–	–			–	6
7	Total	.437	2.218	4.966	5.76	–	–	24.50	50.00	–	7
	Liabilities										
8	Bank notes	.106	.410	.802	2.30*	–	3.70*	5.60*	–	–	8
9	Treasury notes	.071	.395	.280		–			–	–	9
	Deposits of:										
10	Enterprises, except collective farms	.034	.535	.717	1.17	1.46	2.41	3.02	4.68	8.24	10
11	Collective farms	na	.030	.175	.26	.14	.39	.99	.88	5.22	11
12	Other organizations	.015	.181	.302*	.30	–	.38*	.70	1.02	1.66	12
13	Individuals	.002	na	na	na	–	–	.11*	–	.13	13
14	State Budget	.071	.146	1.132	.23	–	7.50*	8.00	18.00*	–	14
15	Items in transit (net)	.017	.186	.440							15
16	Accreditives and special accounts	na	.052	.074	.37	1.23	1.52	1.90	2.97	4.50*	16
17	Accepted checks and transfers	na	.028	.027							17
18	Budget grants for long-term loans	.025	na	na	na	na	na	na	2.40*	5.10*	18
19	Gains from inventory revaluations	na	na	.185		–	–	na	na	na	19
20	Deposits of other banks	.008	.040	.200*	1.13*	–	–		–	–	20
21	Sundry liabilities	.034	.096	.411*		–	–	4.18*	–	–	21
22	Capital	.054	.119	.221		–	–		–	3.00*	22
23	Total	.437	2.218	4.966	5.76	–	–	24.50	50.00	–	23

na Not applicable.
– Not available.
* Estimate.

Sources of Table 17.1

Row 1

1928: Economic Survey, 7 Oct. 1928, p. 4. Figure is the sum of those shown in the source for "loans and discounts" and "special loans to agriculture."

1933, 1937: League of Nations, *Money and Banking 1937/38,* vol. 2 (Geneva, 1938), p. 183.

1940: A. Proselkov, *Den'gi i kredit,* 1940, no. 1, p. 9.

1946: Kreditno-denezhnaia sistema SSSR (Moscow, 1967), p. 60.

1951: Ibid., p. 310.

1956: Gosudarstvennyi bank SSSR k XXII s"ezdu KPSS (Moscow, 1961), p. 122.

1961, 1967: Kreditno-denezhnaia sistema SSSR (Moscow, 1967), p. 310.

Row 2

1928: Economic Survey, 7 Oct. 1928, p. 4. Figure is that given in the source as "loans to industry and agriculture on account of the Commissariat of Finance," which were evidently long-term (cf. ibid., 7 May 1928, p. 3).

1961, 1967: Kreditno-denezhnaia sistema SSSR (Moscow, 1967), p. 304.

Row 3

1928: Economic Survey, 7 Oct. 1928, p. 4.

1933, 1937: League of Nations, loc. cit.

1940: The bonds held by the Bank in 1937 were reportedly retired during 1938. Ia. E. Golev, "Razvitie sovetskogo kredita," in *Finansy SSSR za XXX let* (Moscow, 1947), p. 123. And no new borrowing by the Budget is reported to have occurred before 1940. Bonds held on 1 Jan. 1940 are therefore assumed to have been zero.

Row 4

1928: Economic Survey, 7 Oct. 1928, p. 4.

1933, 1937: League of Nations, loc. cit.

Row 5

1928: Economic Survey, 7 Oct. 1928, p. 4.

1933: O. Efimov, *Kredit i khozraschet,* 1934, no. 2, p. 19.

Row 6

1928: Economic Survey, 7 Oct. 1928, p. 4; the sum of "account with commissariat of ways of communication," "commission, interest, and other charges," and "other assets."

1933: "Sundry assets" as given in League of Nations, loc. cit., minus "cash."

Rows 5–6, 1937; 4–6, 1940; 3–6, 1956 and 1961: Computed residuals.

Row 7

1928: Economic Survey, 7 Oct. 1928, p. 4.

1933, 1937: League of Nations, loc. cit.

1940: Computed from enterprise deposits (row 10) of 1.17 billion and a ratio of such deposits to total assets of 20.3 percent, the latter given in N. Shabanova, *Den'gi i kredit,* 1940, nos. 6–7, p. 13.

1956: Computed from budget deposits of 8.00 billion and a ratio of those deposits to total "resources" of 32.6 percent, the latter given in D. A. Allakhverdian, ed., *Finansy SSSR* (Moscow, 1962), p. 31.

1961: Finansovo-kreditnyi slovar', 1: 84, indicates, with reference apparently but not certainly to 1961, that short-term loans accounted for over 80 percent of total assets and "settlement operations," evidently including nonbudget deposits and resources in settlements, for about 20 percent. The first figure implies an asset total of 51 billion, the second of 49; the average of the two is used here.

Sources of Table 17.1 (continued)

Row 8

1928: The figure for bank notes in *Economic Survey*, 7 Oct. 1928, p. 4, is for notes "issued" and is here replaced by a slightly smaller figure for notes "in actual circulation," *Economic Survey*, 31 Oct. 1928, p. 8.

1933, 1937: League of Nations, loc. cit.

Row 9

1928: Economic Survey, 31 Oct. 1928, p. 8. Treasury notes were not at this time shown explicitly on Gosbank balance sheets (such as that in *Economic Survey*, 7 Oct. 1928), but, in those accounts, were included in part in deposits, as "special exchange funds of the Commissariat of Finance" and in part in sundry liabilities.

1933, 1937: League of Nations, loc. cit.

Rows 8 and 9

1940: Various figures given in Konnik, *Den'gi v period stroitel'stva kommunisticheskogo obshchestva* (Moscow, 1966), p. 156, and Konnik, *Zakonomernosti vzaimosviazi tovarnogo i denezhnogo obrashcheniia pri sotsializme* (Moscow, 1968), pp. 17, 170 n., 187, and 196, imply a 1940 average annual currency figure, both notes and coins, of 2.23 to 2.45 billion rubles. Taking account of possible rounding errors, we assume the correct figure is 2.30 billion. Konnik, *Den'gi*, p. 156, gives figures which imply average currency in 1940 was some 0.1 billion greater than in 1939; N. I. Voznesenskii, *The Economy of the U.S.S.R. during World War II* (Washington, 1948), pp. 7 and 81, indicated total currency in circulation declined during 1940; we assume the total on 1 Jan. 1940 was 2.40 billion. From the latter we deduct 0.10 billion to allow for coins.

1951, 1956: According to Konnik, *Den'gi*, p. 176, currency in circulation in mid-1949 was 1.3 to 1.4 times "prewar"; according to Konnik, *Zakonomernosti*, p. 69, the 1958 average figure was, "by approximate calculation," 2.86 times that of 1940. Assuming the base for both ratios is the 1940 average of 2.30 billion, that mid-1949 was 1.35 times 1940, and that mid-1958 equaled the 1958 average, the 1951 and 1956 figures, for 1 Jan., are interpolated on a straight line between the mid-1949 and mid-1958 figures. No allowance is made for coins.

Reference is made in the text to total currency in circulation as of 1 Jan. 1946. Konnik, *Zakonomernosti*, p. 96, gives average currency in 1945 relative to 1940 as 3.64, implying a 1945 total of about 8.37 billion. According to Konnik, *Den'gi*, p. 169 n., "a certain increase" occurred during the latter half of 1945; the end of the year figure is assumed to have been 8.50 billion.

Row 10

1928: A. Z. Arnold, *Banks, Credit, and Money in Soviet Russia* (New York, 1937), p. 252.

1933: Den'gi i kredit, 1938, nos. 7–8, p. 58. The 0.535 billion figure for these deposits is consistently cited in later publications, which suggests it may be more nearly homogeneous than are alternative figures for 1933 with reported deposit totals for later years.

1937: Iu. E. Shenger, *Den'gi i kredit*, 1938, no. 1, p. 19.

1940: I. A. Dymshits and others, *Finansy i kredit SSSR* (Moscow, 1956), p. 121.

1946: Gosudarstvennyi bank SSSR: kratkii ocherk k sorokaletiiu Oktiabria (Moscow, 1957), p. 58.

1951: Kreditno-denezhnaia sistema SSSR (Moscow, 1967), p. 314.

1956: Gosudarstvennyi bank SSR k XXII s"ezdu KPSS (Moscow, 1961), p. 121.

1961, 1967: Kreditno-denezhnaia sistema SSSR (Moscow, 1967), p. 314.

Row 11

1933, 1937: M. M. Usoskin, *Osnovy kreditovaniia i raschetov* (Leningrad, 1939), p. 104.

1940: Iu. E. Shenger, *Planirovanie finansov* (Moscow, 1940), p. 115.

1946: Gosudarstvennyi bank SSSR: kratkii ocherk k sorokaletiiu Oktiabria (Moscow, 1957), p. 59.

1951: Kreditno-denezhnaia sistema SSSR (Moscow, 1967), p. 314.

Sources of Table 17.1 (continued)

1956: Gosudarstvennyi bank SSSR: kratkii ocherk k sorokaletiiu Oktiabria (Moscow, 1957), p. 59.

1961, 1967: Kreditno-denezhnaia sistema SSSR (Moscow, 1967), p. 314.

Row 12

1928: Arnold, pp. 252–53.

1933: Efimov, p. 19.

1937: Interpolated as the average of figures for 1936 and 1938. The latter are obtained as total current accounts, given in E. Lande, *Planovoe khoziaistvo,* 1936, no. 4, p. 131, and A. Proselkov, *Den'gi i kredit,* 1939, no. 4, p. 25, less accounts of collective farms, given in Usoskin, p. 104.

1940: From component data from various sources, the 1939 total of deposits included in rows 10, 11, and 13 can be calculated as 1.39 billion. Such deposits reportedly increased by 24.4 percent during 1939. Proselkov, *Den'gi i kredit,* 1940, no. 1, p. 9.

1951: Extrapolated from 1956 on a series of different coverage given in *Kreditno-denezhnaia sistema SSSR* (Moscow, 1967), p. 308.

1956: Total current accounts in *Gosudarstvennyi bank SSSR k XXII s"ezdu KPSS* (Moscow, 1961) p. 121, less collective-farm accounts.

1961, 1967: Kreditno-denezhnaia sistema SSSR (Moscow, 1967), p. 150.

Row 13

1928: Arnold, p. 252.

1956: Estimated from a figure of 0.12 billion for 1957. *Gosudarstvennyi bank SSSR: kratkii ocherk k sorokaletiiu Oktiabria* (Moscow, 1957), p. 58.

1967: Kreditno-denezhnaia sistema SSSR (Moscow, 1967), p. 206 n.

Row 14

1928: Arnold, p. 252.

1933: Computed from total liabilities and a reported share of budget deposits in the total of 6.6 percent, Konnik, *Den'gi,* p. 152.

1937: Computed from a 1936 figure of 0.902 billion (Lande, p. 131) and an increment during 1936 of 0.230 billion. G. F. Grin'ko, *Finansovaia programma Soiuza SSR na 1937 god* (Moscow, 1937), p. 6.

1940: Computed from total liabilities and a reported share of budget deposits in the total of 4.0 percent, Konnik, *Den'gi,* p. 188.

1951: A rough estimate, based on a statement in Allakhverdian, p. 31, that budget deposits were 39.3 percent of total liabilities, the known figure for bank loans, and the known ratio of loans to total assets in 1940 and 1956.

1956: Computed from short-term loans and a reported share of "budgetary resources" in loans of "about 40 percent," in V. K. Sitnin, *Kontrol' rublem v sotsialisticheskom khoziaistve* (Moscow, 1956), p. 56.

1961: A rough estimate, based on statements that between 1956 and 1961 the Budget's accounts "doubled," Konnik, *Den'gi,* p. 189, or "more than doubled"—*Gosudarstvennyi bank SSSR k XXII s"ezdu KPSS* (Moscow, 1961), p. 10, and, in a source published in 1962—that over 50 percent of bank loans are effected on account of budget resources. Allakhverdian, p. 356; the 1958 edition of the same text uses the figure of "over 40 percent." D. Allakhverdian and N. Liubimov, eds., *Finansy SSSR* (Moscow, 1958), p. 332.

Row 15

1928: Economic Survey, 7 Oct. 1928, p. 4.

1933, 1937: Usoskin, p. 101.

Row 16

1933, 1937: Ibid.

Row 17

1933, 1937: Ibid.

Sources of Table 17.1 (continued)

Rows 15, 16 and 17

1940: According to Konnik, *Den'gi*, p. 189, "resources of the economy" amounted to 31.3 percent of total liabilities. From context and from terminology, this appears to represent the sum of enterprise accounts (row 10), collective-farm accounts (row 11), and "resources of the economy in settlements" (rows 15, 16, 17). The latter is estimated as a residual. The resulting figure, 0.37 billion, looks implausibly small relative to a known total for 1941 of 0.75 billion. On the other hand, this category had in the preceding years declined from 0.54 in 1937 to 0.52 in 1938 and 0.46 in 1939.

1946, 1951, 1956: Gosudarstvennyi bank SSSR: kratkii ocherk k sorokaletiiu Oktiabria (Moscow, 1957), p. 58.

1961: N. D. Barkovskii and K. S. Kartashova, *Kreditnoe planirovanie v SSSR* (Moscow, 1966), p. 142.

1967: Estimated from a figure for 1966, given ibid., of 4.30 billion.

Row 18

1928: Economic Survey, 7 Oct. 1928, p. 4.

1961, 1967: Estimated from row 2 and a statement in Barkovskii and Kartashova, p. 156, that "the fund for long-term lending, created on account of reserves of the Budget, covers more than 80 percent of total indebtedness on long-term loans."

Row 19

1937: Computed as the sum of receipts on account of the revaluation of bank-financed inventories, reported in the 1935 and 1936 annual budgets. *Gosudarstvennyi biudzhet Soiuza SSR za vtoruiu piatiletku, 1933–1937* (Leningrad, n. d.), pp. 10–11. The appropriateness of the procedure is roughly confirmed by comparison of reported data for Gosbank capital, inclusive and exclusive of gains from revaluations.

Row 20

1928: Arnold, p. 252.

1933: Efimov, p. 19.

1937: Estimated from a 1936 total of .093 billion (Lande, p. 131) and an increase during 1936 of 0.1 billion for the long-term banks alone (Grin'ko, p. 6).

Row 21, 1928, 1933, 1937: Computed residual.

Row 22

1928: Economic Survey, 7 Oct. 1928, p. 4.

1933, 1937: League of Nations, loc. cit.

1967: Estimated from statements in *Kreditno-denezhnaia sistema SSSR* (Moscow, 1967), p. 95, published in 1967, that the Bank's "statutory capital" was 1.5 billion rubles and in Barkovskii and Kartashova, p. 141, published in 1966, that its "reserve capital" then equaled its statutory capital. No allowance is made for other, minor, capital accounts.

Rows 19–22, 1940: Computed residual.

Rows 20–22, 1956: Computed residual.

Row 23: See notes for row 7.

other identifiable causes of particular inconsistencies in the prewar data. But, as a whole, the discrepancies in this period are so numerous and complex that it appears unlikely that they could ever be fully disentangled.[9]

In the postwar data, the inconsistencies are more systematic, and it is

9. See, however, R. Moorsteen and R. P. Powell, *The Soviet Capital Stock, 1928–1962* (Homewood, Ill., 1966), Table I-1 and accompanying notes.

possible to put some order into the data. As is illustrated in Table 17.2, there are differences, first, between the data published by Gosbank and those published by TsSU. Gosbank usually published figures for its own loans only (col. 1), but occasionally data—of clearly comparable sectoral classifications—for all banks (col. 2). TsSU regularly publishes data for all banks (cols. 3 and 4). Fairly clearly, for both sources the banks covered other than Gosbank are the banks for long-term investment or,

Table 17.2. Distribution of short-term bank loans by sector, 1 January 1967 (billion rubles)

	Gosbank data		*TsSU data*	
	Gosbank (1)	*All banks* (2)	*All banks* (3)	*All banks* (4)
Heavy industry	10.585	26.515	26.053	25.100
Light industry	15.930			
Collective farms	.392	.392	.392	na
State agriculture	4.662	12.593	4.724	4.550
Procurement	7.931		8.325	—
Transportation and communications	.805	.805	.668	—
Construction	.105	5.283	5.245	2.430
Sales and supply	4.832	4.832	8.653	—
Trade	23.725	23.725	22.332	19.500
Other sectors	3.194	3.194	.947	—
Total	72.161	77.339	77.339	72.000

na Not applicable. — Not available.

Sources

Col. 1: Kreditno-denezhnaia sistema SSSR (Moscow, 1967), p. 310, and *Den'gi i kredit,* 1968, no. 8, pp. 67–68.

Col. 2: Kreditno-denezhnaia sistema SSSR (Moscow, 1967), p. 304.

Col. 3: Narkhoz 67, p. 891.

Col. 4: Computed from data in *Narkhoz 67,* pp. 861–63. Figures are rounded to three significant places.

since 1959, the Construction Bank (Stroibank). The two sources classify loans by sectors differently, and there is evidence to suggest that the difference has to do with the administrative *level* at which the classification is made.[10] To a greater degree, TsSU data are classified at the enterprise level, as against classification by ministry or other superior organ, with the consequence that they are less sensitive to the effects of administrative reorganizations than are the Gosbank data. Neither classification, however, is based on a genuine commodity classification.

10. See ibid., pp. 530–33.

The two different TsSU distributions shown in Table 17.2 are, in col. 3, the loan figures published regularly in the *Narkhoz* yearbooks and, in col. 4, the loan figures implicit in the breakdowns of working capital and its financing which appear in the same yearbooks. The latter breakdowns, it is worth remarking, are an extraordinarily useful postwar (post-1957) addition to the statistics on capital formation that the regime has been willing to release. Comparison of the two sets of loan data suggests that col. 4 differs from col. 3 chiefly because of the exclusion from the former of loans regarded as related to fixed capital investment (loans for "the introduction of new techniques and mechanization" and for "the increased production of consumer goods" and loans to contract construction on stocks of uninstalled equipment). The col. 4 distribution also omits, explicitly, loans to collective farms, and evidently excludes loans to foreign trade organs from the trade total. More complete distributions from the working capital data are available for earlier years.[11]

A second dimension for which quite complete data are available is the distribution of Gosbank loans by purpose or, as it is often put, by the "object" against which the loan is made. Here, again, what is probably most noteworthy is stability over time rather than change. Of total loans outstanding on 1 January 1967 (see Table 17.3), at least 85 percent would be fully consistent with the terms of the Reform decree of 23 July 1931, which provided that the Bank should lend to finance seasonal accumulations of inventories, goods in transit, and other temporary needs—together with an essentially amending decree of 16 August 1933 which authorized the Bank to finance in addition a portion of nonseasonal inventories in trade. The exceptions, most of which have origins in the late 1930's but have been actively extended in recent years, include loans to industry "on turnover," so called (row 1c). These are loans on nonseasonal inventories, conceived of as based on the flow through the stock rather than on the stock itself. The decree specifying the Bank's operations under the current economic reform, dated 3 April 1967, puts stress on these and provides that they should cover labor as well as material costs.[12] In the course of 1967 their volume rose to 5.3 billion rubles,[13] which represents a large increase but, still, a small share of total loans. Another clear exception is loans for—minor and highly restricted—fixed capital purposes (row 3), which are classed with short-term loans although they may be issued for terms of several years. "Payment loans" (row 5) are less clearly an exception, since they appear to substitute for loans on settlement documents, etc., which, in turn, are effectively loans on goods

11. See ibid., pp. 499 ff.
12. The text of the decree is given in *Den'gi i kredit*, 1967, no. 6, pp. 3ff.
13. *Den'gi i kredit*, 1968, no. 7, p. 6.

Table 17.3. Distribution of short-term Gosbank loans by purpose, 1 January 1967 (billion rubles)

1 Loans on inventories ("material values")		54.075
a Production supplies and goods in process	5.387	
b Seasonal accumulations of agricultural products and raw materials	16.099	
c Inventories in industrial enterprises credited "on turnover"	2.976	
d Finished products	4.981	
e Commodities in trade	21.107	
f Commodities in sales and supply	2.203	
2 Loans for seasonal expenses		1.258
3 Loans for the introduction of new techniques and mechanization and for the increased production of consumer goods		1.721
4 Loans on settlement documents in transit, accreditives, special accounts, and limited check books		9.762
5 "Payment loans"		1.998
6 Other loans		3.347
7 Total		72.161

Source:
Kreditno-denezhnaia sistema SSSR (Moscow, 1967), p. 311.

in transit. Payment loans are made to enterprises who have exhausted their deposit balances to permit them to render particular payments—in recent years, evidently, chiefly to participants in clearings (on which, see below). "Other loans" include various exceptional purposes, such as loans for "temporary supplements to owned capital" and loans for payment of wages.

Loan distributions about as detailed as that of Table 17.3 can be found for selected years as far back as 1936 and, in less detail, for additional years and years back to 1932. The principal difficulty in composing wholly homogeneous time series is that the classification scheme has changed somewhat over time. In particular, earlier breakdowns divide the combined total of loans on inventories and on seasonal expenses into two different parts, "planned loans" and "loans on temporary needs." Planned loans are those which are planned for each borrowing enterprise separately, in contrast to categories planned as aggregates only. Loans on temporary needs are those foreseen in the 1931 act, relate to inventories resulting from the overfulfillment of output plans or from causes outside the enterprise's control, and have never been large. On 1 January 1967

they accounted for 0.6 out of the 55.3 billion combined total of such loans with planned loans.[11]

A third characteristic of Gosbank loans which can be described statistically is the rate of interest charged on them. The volume of data involved, however, is small. The Bank's basic rate—after 1931, its rate on "planned loans"—was 8 percent from 1927 to 1934, 6 percent from 1934 to 1936, 4 percent from 1936 to 1955, and 2 percent from 1955 to 1967.[15] Rates on other loans have been similarly unvarying, somewhat higher on loans for temporary needs and for overdue loans, generally lower on loans on settlement documents and such. The April 1967 decree left rates on loans on seasonal inventories and on settlement documents at their prevailing levels of 2 and 1 percent, but tied rates on other short-term loans to the rates to be charged, evidently 5–7 percent, for the financing of fixed capital investments. In addition to interest rates, scattered data are available on the average length of time for which loans are outstanding (on the order of 30–40 days) and on the share of overdue loans in the total (not more than a few percent). These vary somewhat, but no more than interest rates do they behave like variables deliberately adjusted to control the total quantity of loans. The latter, rather, appear to move with the volume of "eligible assets" in the system.

Long-Term Loans

Between 1927 and 1932, the rather complicated banking structure which had come to exist by the late 1920's was simplified, short-term lending being concentrated in Gosbank, and long-term lending in special banks created, in part, for that purpose. As of 1928, however, Gosbank's long-term lending, which was to industry and agriculture, was on account of the Commissariat of Finance rather than on its own account. Hence, long-term loans in the Bank's balance sheet are matched by a liability to the Budget for the corresponding funds provided by it (compare rows 2 and 18 in Table 17.1). For a few months at the beginning of 1932, a considerable sum—about 0.2 billion rubles—of long-term loans and corresponding liabilities were transferred from the Agricultural Bank to Gosbank; in the summer of that same year, they were transferred back to a reconstituted Agricultural Bank.

From 1932 to 1959, Gosbank appears not to have been a significant

14. *Kreditno-denezhnaia sistema SSSR* (Moscow, 1961), p. 111. Table 17.3 is taken from p. 311 of this same source. Comparison of the two breakdowns in the source is instructive.

15. *Monthly Survey*, April 1927, p. 33; *Economic Survey*, 15 April 1930, p. 5; M. M. Usoskin, *Osnovy kreditovaniia i raschetov*, no. 10, (Leningrad, 1939), p. 109; and G. Shvarts, in *Den'gi i kredit*, 1956, no. 10, p. 22.

long-term lender, either on its own account or on account of others.[16] In 1959, the organizational changes of 1932 were again reversed, the Agricultural Bank again being amalgamated with Gosbank. From that date, therefore, long-term loans reappear among the Bank's assets and a budgetary "fund for financing long-term loans" among its liabilities, although the Bank evidently now lends a little at long term also on its own account.[17] Statistics are available for the distribution of long-term loans between enterprises (chiefly collective farms) and individuals (chiefly for housebuilding).

Government Bonds

Unlike U.S. banks, Gosbank has not been, at least so far as we know, a large financer of government deficits or a large holder of government bonds. At the beginning of the period covered here, it held a few bonds, probably in consequence of the responsibility it then had for the marketing of government bonds. This operation was transferred to the savings banks in 1932. Its early bond holdings may have resulted also from a requirement in force at the time that enterprises invest in government bonds their "reserve funds." From 1 March 1931, in any case, such bonds dropped to approximately zero in the published accounts of the Bank.

In late 1931 and early 1932 the Bank acquired, in exchange for part of its short-term loans outstanding, the "bonds of the Bank for Long-Term Investment" already referred to. These are the approximately 0.6 billion rubles of bonds appearing in Table 17.1 for 1933 and 1937. They were issued for a term of ten years (at an interest rate of 2.5 percent) but were retired, by the Budget, before the expiration of their term, during 1938.

One would have had the impression that after 1938 government bonds did not appear among the Bank's assets: Soviet sources refer with pride to the fact that the Budget does not borrow from the Bank; even wartime deficits evidently were covered by currency emission rather than by borrowing from the Bank. As is explained below, however, we have been told in a recently published source that the Budget did in fact borrow from the Bank in the course of 1940. This information puts in question both the disposition of the debts resulting from that operation and the pos-

16. Data are given in *Kreditno-denezhnaia sistema SSSR* (Moscow, 1967), p. 310, which imply the contrary; but the source evidently attributes to Gosbank before 1959 loans which it came to make after 1959. On the other hand, Usoskin, p. 109, writing in 1939, refers to long-term lending by Gosbank to consumer cooperatives on account of funds provided by Tsentrosoiuz.

17. Cf. N. D. Barkovskii and K. S. Kartashova, *Kreditnoe planirovanie v SSSR* (Moscow, 1966), p. 156.

sibility that similar, but so-far unreported, borrowings may have occurred in subsequent years.

Non-Earning Assets

The one reserve requirement imposed upon Gosbank, dating from 1922, is that it hold against its issue of "bank notes" a 25 percent reserve of gold, other precious metals, and foreign exchange; the maximum issue of "treasury notes" is fixed as a fraction of bank notes.[18] From data available for years up to 1937, it appears that the Bank then held reserves largely in the form of gold, and its total reserves moved closely with its bank-note issue. Beyond 1937 we have no statistical evidence on the size or composition of reserves. The Bank's gold holdings, however, presumably have remained small, since gold not needed for its cover requirement appears to be held to the account of the State Budget.[19] Foreign-exchange reserves for the whole economy evidently are held by Gosbank, but these too are likely to be small, at least in proportion to total bank assets.

Gosbank holds a little till cash and sundry assets in the form of premises, equipment, etc. About these, we have little or no data, other than computed residuals, beyond the early 1930's.

Gosbank Liabilities

Currency

Much as banks elsewhere, Gosbank in acquiring loans and other assets incurs monetary liabilities—monetary in the sense that they are media with which payments can be rendered. These include both currency and demand deposits. Of total currency, Gosbank is—ordinarily—the sole issuer of notes; coins are issued by the Budget on its own account. Although a distinction continues to be made between bank notes and treasury notes, which differ in cover (see above) and denominations, both are issued by the Bank and treated as its liabilities.

Statistics on currency in circulation, as of the first day of each year and for other dates as well, are available through 1 January 1937. Annual averages for currency in circulation were published more or less currently through 1936; an average figure for 1937 was released recently in a volume by I. I. Konnik.[20] Coins in circulation as of the first-of-month

18. There is some question whether these cover requirements are still in force. Cf., however, *Finansovo-kreditnyi slovar'* 1 (1961): 121 and 2 (1964): 627.

19. This is not absolutely clear, but see in particular K. I. Nazarkin, ed., *Uchet i operativnaia tekhnika v Gosbanke* (Moscow, 1955), pp. 239–41.

20. I. I. Konnik, *Zakonomernosti vzaimosviazi tovarnogo i denezhnogo obrashcheniia pri sotsializme* (Moscow, 1968), p. 170 n.

dates shown in Table 17.1 were .020 billion rubles in 1928, .036 billion in 1933, and .043 billion in 1937,[21] or a small and diminishing share of total currency.

Beyond 1937, how much we know about currency in circulation depends largely upon how much confidence we choose to place in Konnik and the data he provides in two recent publications.[22] He supplies, it should be stressed, no absolute figures later than 1937, but various percentage changes, velocity figures, and the like. If one accepts these data and by some means disposes of their internal inconsistencies, it is possible to extend the available currency series to include annual averages for all years from 1938 through 1947 and, also, the year 1958, and to include totals for the dates 22 December 1947 (the morrow of the Currency Reform) and "mid-1949." That is to say, Konnik provides a picture of sorts of currency circulation through the late 1940's.[23] Within the past twenty years, he gives us only the single figure for 1958, and that he describes as "by approximate calculation." No other known source is helpful on the recent postwar years.

The Konnik data are used in Table 17.1 to estimate the (1 January) figures for 1940, 1951, and 1956, for notes in circulation. Coins are assumed to account for 1.0 billion rubles of total currency in 1940, but, because of the roughness of the estimates, are assumed simply to be included in the note totals for 1951 and 1956. A similarly obtained estimate for total currency, 8.50 billion rubles on 1 January 1946,[24] is not included in Table 17.1 because it is uncertain how much of the total was on the Bank's account and how much the Budget's. Soviet sources are insistent that the Budget issued currency during the war to cover its deficits, although they do not explain what form the emission took. None of the wartime totals, presumably, is inclusive of German counterfeit currency in circulation or exclusive of genuine currency lost and destroyed.

The reasons for hesitating to trust completely the Konnik data are, first, their internal inconsistencies, which are of significant size although not of orders of magnitude. Further, some of the annual figures look implausible on their face although the broad pattern of change indicated

21. Sources are the same as for rows 8 and 9 in Table 17.1.

22. I. I. Konnik, *Den'gi v period stroitel'stva kommunisticheskogo obshchestva* (Moscow, 1966) and id., *Zakonomernosti.*

23. Konnik confuses further the already unclear picture of what happened in the 1947 currency conversion. Among other things, he asserts that, although the official conversion rate was 10 to 1, the new currency put into circulation was 1/13.5 of that submitted for conversion. Konnik, *Den'gi,* p. 174. On the other hand, he gives currency outstanding on 22 December 1947 as 1.27 times the 1940 level, which is nearer $\frac{1}{3}$ of the peak wartime level, 3.64 times 1940, reached in 1945. Konnik, *Zakonomernosti,* pp. 69 and 96.

24. See sources for rows 8 and 9, Table 17.1.

by the data does not. And, as is shown in Table 17.4, a second relatively recent source, M. S. Atlas,[25] provides data similar to Konnik's which imply a very different behavior of the currency stock in the 1937–39 period. This difference in turn may imply a difference in the base to which war and postwar relatives should be linked. Of the two sources, Konnik's looks considerably the more reliable, but without an explanation for their discrepancies it is hard to place full confidence in either.

Table 17.4. Alternative derivations of currency in circulation, 1937–39 (1 January)

Data from M. S. Atlas	*1937*	*1938*	*1939*
1 Currency turnover through Gosbank, billion rubles	12.4	14.0	16.5
2 Turnover velocity per year	8.17	8.28	8.39
3 Average currency, billion rubles	1.52	1.69	1.97
Data from I. I. Konnik			
4 Personal money income, billion rubles	15.0	17.1	22.1
5 Income velocity per year	11.0	10.6	9.4
6 Average currency, billion rubles	1.36	1.61	2.35

Sources

Rows 1 and 2: M. Atlas, *Razvitie Gosudarstvennogo banka SSSR* (Moscow, 1958), pp. 200–201.

Row 3: Calculated from rows 1 and 2.

Row 4: Computed from data in Konnik, *Den'gi*, pp. 152 and 156.

Row 5: 1937 is computed from ibid., p. 153; 1938 and 1939 figures, ibid., p. 156.

Row 6: Calculated from rows 3 and 4.

Deposits of Enterprises and Organizations

Relatively full data for demand deposits at Gosbank before the Credit Reform are available, although somewhat difficult to distribute among holders and to make comparable with the post-Reform data. During the Reform itself, reported deposits are essentially those of organizations other than enterprises, since the deposit claims of the latter were netted from their loans in the *conto corrento*.

The Reform created in the Bank's deposit operations a basic distinction, which has survived since, between settlement accounts (*raschetnye scheta*) and current accounts (*tekushchie scheta*). The primary difference between the two is that settlement accounts are held by *khozraschetnye*

25. M. Atlas, *Razvitie Gosudarstvennogo banka SSSR* (Moscow, 1958).

enterprises, financially autonomous and producing goods and services for sale, and by administrative organs superior to them. Current accounts are held by all other organizations, except that collective farms hold current rather than settlement accounts. There are also minor technical differences between the two, particularly in the handling of claims against overdrawn accounts. Both are demand deposits, expendible on goods and services and in financial transactions and convertible into currency. Both kinds of deposits pay interest, the rate of which has declined, in phase with rates on short-term loans, from 5 percent in 1931 to 0.5 percent in 1955, a preferential rate being paid on collective-farm accounts, no interest being paid on deposits of budget-financed organizations.

Considered by class of holder, deposits of enterprises—settlement accounts—are reported for all peacetime years since 1932 (see row 10 of Table 17.1). Widely divergent figures for these accounts cease to be a problem after the early 1930's. Data for current accounts of collective farms are similarly available, although not without inconsistencies. In 1959 the so-called "indivisible fund" accounts of the collective farms, which are used for investment outlays, were transferred to Gosbank from the Agricultural Bank. For 1961 and 1967, therefore, collective-farm deposits in Table 17.1 (row 11) are the sum of these two accounts. The data are most ragged for deposits of organizations other than enterprises (row 12), which should include budget-financed institutions, trade unions, social organizations, and such. Data are unreported for some prewar and most postwar years. Figures that are reported are likely not to cover the same organizations in all years.

Various kinds of detail on kind and holder of deposits have been released, one compilation of which, all taken from a single source, is shown in Table 17.5. The Gosbank breakdowns shown there require no further explanation except that what elsewhere is treated as the total of settlement accounts is there divided between accounts of the usual sort, special accounts (dating from 1938) into which enterprises are required to pay funds for capital repairs, and accounts disposed over by administrative organs for disbursements among the enterprises composing an industry. As with the loan data, deposit figures are reported for banks in general, presumably meaning the long-term banks as well as Gosbank (see col. 4).[26] For what reason deposits of trade unions and related organizations (row 4) are smaller for all banks than for Gosbank is unexplained in the source, but it may be that *state organizations* are classed with *other* organizations (row 4) in the Gosbank breakdown, with *state* organizations (row 1) in the breakdown for all banks.

Payments by one enterprise to another are made not only with demand

26. Data like those in col. 4 appeared for a time in *Narkhoz* but then were dropped.

Table 17.5. Distribution of bank deposits of enterprises and organizations by kind and by holder, 1 January 1967 (billion rubles)

	Gosbank			*All banks*
	(1)	*(2)*	*(3)*	*(4)*
1 State enterprises and organizations			7.807	10.046
2 Cooperative enterprises and organizations			.430	.536
Of rows 1 and 2:				
a Settlement accounts		7.104		
i Industry	2.616			
ii Agriculture and procurement	1.057			
iii Transportation and communications	.651			
iv Sales and supply	.190			
v Trade	.700			
vi Other sectors	1.890			
b Accounts for capital repairs		.656		
c Accounts for redistribution of working capital and funds for temporary financial assistance		.477		
3 Collective farms			5.224	5.224
a Current accounts		4.170		
b Indivisible fund accounts		1.054		
4 Trade-union, social, and other organizations			1.657	1.185
5 Total			15.118	16.991

Sources

Cols. 1 and 2: Kreditno-denezhnaia sistema SSSR (Moscow, 1967), p. 314.

Col. 3: Ibid., p. 150, except that collective-farm accounts are from p. 314. The source gives a different figure for current accounts of collective farms on p. 150 from that on p. 314.

Col. 4: Ibid., p. 308.

deposits but by means of clearings, i.e., by the canceling of enterprises' claims against one another directly rather than indirectly, through their common claims against the Bank. The regime has pressed the development of clearings since the 1930's, although they have become quantitatively important only in the postwar period. They take various forms at any given time and have changed forms over time. Soviet authors themselves raise the obvious question of whether claims outstanding against the clearings do not acquire the attributes of payments media. In some measure, claims against clearings appear in Gosbank's balance sheet.[27] No data on their volume outstanding, however, have been published.

The concern of the regime with the way payments are rendered is evidenced also by the publication of detailed data on the distribution,

27. Cf. Riauzov and Tertus, pp. 116–18.

by mode of payment, of the total "non-cash payments turnover": by what are distinguished in Soviet practice as the acceptance method, accreditives and special accounts, transfers, checks of various sorts, etc. For the outside observer, it is hard to see much of interest in these figures. Note should perhaps be taken of the fact that in their most frequently published form such data are quite restricted in coverage—usually to payments for goods and services, and to interurban as against local payments.[28]

Deposits of Individuals

Gosbank has never accepted any significant volume of deposits from private persons. A trivial quantity of such deposits was held at the Bank in the late 1920's, none at all from the Credit Reform until the war. During the war, the Bank began to accept deposits from military personnel and, for relatively large accounts, from "distinguished collective farmers, highly paid stakhanovites, and representatives of the Soviet intelligentsia."[29] Individuals' deposits at Gosbank have the same characteristics as at the savings banks. Only scattered figures on the Gosbank accounts have been released, but all are small.

Deposits of the State Budget

At least as serious a deficiency in the monetary statistics as the lack of currency figures is the lack of data for the demand deposits held at Gosbank by the Ministry of Finance—the State Budget. From the evidence we have, these accounts have been an extremely erratic component of the Bank's total liabilities, and one which in some periods has been very large. From about 7 percent of total liabilities in 1933, they rose to 23 percent by 1937. By the beginning of 1941, it is indicated, they had been totally drawn down, and during the war, presumably, they remained near zero. They were built up again in the late 1940's, to almost 40 percent of total liabilities by 1951. In the years since 1951 they have evidently varied considerably, but roughly within the range of 30 to 50 percent of the total.[30]

28. On such data in general, see M. Gindin, in *Den'gi i kredit,* 1967, no. 6, pp. 20–28.

29. V. M. Batyrev and V. K. Sitnin, *Finansovaia i kreditnaia sistema SSSR* (Moscow, 1945), p. 75.

30. The firmest postwar evidence we have, from D. A. Allakhverdian, "Rol' kredita v sotsialisticheskom vosproizvodstve," in Moskovskii finansovyi institut, *Nauchnye zapiski* 8 (Moscow, 1957): 31, is that the ratio of budget accounts to total Gosbank liabilities changed as follows:

1 Jan. 1951	39.3%	1954	42.6
1952	40.8	1955	31.9
1953	46.1	1956	32.6

Since short-term bank loans declined absolutely from 1954 to 1955, budget deposits almost certainly did so also, and they may have done the same from 1953 to 1954.

Budget deposit figures, presenting some puzzles, are available to 1932. Beyond that date, absolute totals have been published for only two years, 1935 and 1936.[31] Absolute increments are given for several years, both before the war and after. Budget deposits as a fraction of total liabilities are given for some years in which the liability total is known—although for more in which it is not. With a good deal of ambiguity, budget deposits as a ratio to loans are given for some postwar years. Depending upon how boldly these various pieces are fitted together, they can be made to yield a series covering all prewar years except 1938 and, probably, 1939, but only scattered figures, of highly questionable reliability, in the 1950's and 1960's. In particular, the figure in Table 17.1 for 1956, to which other postwar figures must be linked, is itself not at all firm.

The Soviet Budget has, reportedly, run a surplus in every year since 1924, excepting the three wartime years, 1941–1943. Soviet sources have long spoken as though that surplus were, more or less fully, accumulated in the form of deposits at the Bank: e.g., from a 1940 source: "The excess of budget revenues over expenditures means the accumulation of free money balances, which are kept in Gosbank";[32] or, from a 1966 source, that excess "is wholly directed to the strengthening of credit resources."[33] It would appear, therefore, that the annual surpluses, which are known for all years, could be used to estimate increments in the Budget's deposit account, and, given the total for one year, to estimate a continuous series for those deposits. This procedure, however, is demonstrably unreliable.

(i) In the three years, 1937 through 1939, reported budget surpluses amounted to over 0.9 billion rubles. Over the same period, from 1 January 1937 to 1 January 1940, the Budget's deposits at the Bank were *reduced* by 0.9 billion rubles (see Table 17.1). The difference is probably accounted for in part by the retirement, during 1938, of the 0.6 billion of bonds of the Bank for Long-Term Investment, which was affected on the Budget's account and does not appear among budgetary expenditures for that year.[34]

31. V. P. D'iachenko, "Sovetskaia sistema finansov i kredita v bor'be za sotsialisticheskoe perestroistvo ekonomiki i postroenie kommunizma v SSSR," in *Sovetskaia sotsialisticheskaia ekonomika, 1917–1957* (Moscow, 1957), p. 580, gives what may be a third figure: that at the beginning of the war financial reserves of the State Budget amounted to 0.82 billion rubles. From other data available for 1940 and 1941, however, it looks as though D'iachenko's reference must be either to a date earlier than 1940 (it could be to 1939) or to some concept of budget resources other than its Gosbank deposits (e.g., to state stockpiles).

32. Iu. E. Shenger, *Planirovanie finansov* (Moscow, 1940), p. 124.

33. Barkovskii and Kartashova, p. 140.

34. Cf. Ia. E. Golev, "Razvitie sovetskogo kredita," in *Finansy SSSR za XXX let* (Moscow, 1947), p. 123.

(ii) For the year 1940, the surplus usually reported is extraordinarily large, 0.59 billion rubles.[35] At least one source gives a smaller but still large excess of "current" revenues over "current" expenditures, of 0.32 billion.[36] Recently, however, some 26 years after the fact, we have been told that, because of an excess of expenditures over revenues, the Budget in the course of 1940 not only used up its balance at Gosbank but was forced to borrow from the Bank.[37]

(iii) From 1951 through 1955, budget surpluses amounted to 12 billion rubles. Over the same period, budget deposits at the Bank evidently increased only slightly—by 0.5 billion according to the estimates in Table 17.1. From an extraordinarily candid source,[38] we are given the explanation that, in this period, the Budget made certain grants to enterprises for working capital, which grants it charged to its accumulated deposits at the Bank. The withdrawals from those deposits, moreover and most remarkably, were included in budgetary revenues.

In some periods, it is clear, budget surpluses have resulted, if not in the equivalent, then in substantial additions to deposit balances at the Bank. This was so in 1933–36 (in 1936 the increase in deposits was reportedly larger than the surplus)[39] and in 1948–50. From 1956, the 1951–55 practice was, declaredly, to cease.[40] Since 1956, moreover, the annual budget messages have now and then contained fairly precise statements about the allocation of a portion of the surplus to the Budget's deposit balance at Gosbank—and also, it should be noted, to budget funds for financing long-term loans. But past experience makes one wary of placing large reliance on these reports, in the absence of explicit data as to the size of budget deposits. That experience raises a large question also, which is outside the compass of this chapter but to which the answer is totally obscure, of the meaning, within some comprehensible system of accounting, of the Soviet budgetary surplus.

35. *Narkhoz 60*, pp. 899–900.

36. N. I. Voznesenskii, *The Economy of the U.S.S.R. during World War II* (Washington, 1948), p. 79.

37. Konnik, *Den'gi*, p. 155. In the light of Konnik's evidence, and assuming it to be true, the frequent assertion in Soviet sources—e.g., Z. V. Atlas and E. Ia. Bregel', *Denezhnoe obrashchenie i kredit SSSR* (Moscow, 1947), p. 233—that previously accumulated balances were used by the Budget to finance the war, must be understood to refer to 1939–40 rather than the years following the German invasion (cf. n. 31, above). If, as is conceivable, the Budget in 1940 counted its borrowings from Gosbank as a revenue, this would be consistent, at least, with its treatment of its borrowings from the public and from the savings banks, which it also records among its revenues.

38. N. Kisman and I. Slavnyi, *Sovetskie finansy v piatoi piatiletke* (Moscow, 1956), pp. 26, 33.

39. G. F. Grin'ko, *Finansovaia programma SSSR na 1937 god* (Moscow, 1937), p. 6.

40. Kisman and Slavnyi, p. 33.

Non-Monetary Liabilities

Gosbank's items-in-transit account (row 15 in Table 17.1) is essentially its interbranch float, reflecting payments initiated and not yet completed. Because Soviet practice is most commonly to charge the account of the payer before crediting the payee, items in transit are usually a net liability to the Bank rather than, as is usual with comparable accounts in the United States, a net asset. An attempt during the Credit Reform to reverse the procedure resulted in the piling up, as a net asset, of a large quantity of uncleared claims and was quickly abandoned. Statistics of items in transit, as a separate account, are available through 1939. Thereafter they appear in a combined total, known in Soviet parlance as "resources of the economy in settlements," which also includes a variety of instruments resembling letters of credit or officers' checks: accreditives, special accounts, accepted checks, transfers (rows 16 and 17 in Table 17.1). Data for the combined total are available for many but not all years.

Budget grants for long-term loans (row 18), already referred to, are the counterparts of long-term loans made by the Bank.

Gains from inventory revaluations (row 19) is an analytically interesting account, about whose magnitude not much is known. Beginning in 1935, capital gains and losses to enterprises, resulting from the effects of general price changes on the value of their inventories, were partly transferred to the Bank by corresponding adjustments in their bank loans. The Bank's accounts were balanced by entering an equal amount to an account entitled, properly, "Settlements with the Ministry of Finance for revaluations of commodity-material values." Data on the account are available for 1 January 1936 and 1937 and, for changes in it, in 1940. Presumably its size increased with the rise of prices through the late 1940's and then declined with the reduction in prices in the early 1950's. At some uncertain date before 1955, the account was abolished.[41] What are essentially capital gains appear also in a "special account for withdrawal of working capital," entries in which serve to counterbalance the rise in loans to industrial enterprises when they are first shifted to bank financing of a part of their nonseasonal inventories. Similarly, Gosbank's books presumably carry somewhere its gains from the 1947 currency conversion, although on neither this nor the preceding account do we have data.

The Bank's sundry liabilities (row 21) include accounts payable and similar claims arising in its operations. They also include, beginning in 1935, an account for turnover taxes on "preterm shipments." These represent taxes paid on grain products shipped to remote regions ahead

41. I. Skobelkin, in *Den'gi i kredit*, 1955, no. 2, p. 60.

of wintertime transportation difficulties, which taxes are transferred to the Budget only as the stock of products is drawn down through processing or sale.[42] No explicit information is available on sundry liabilities beyond the mid-1930's.

Gosbank's capital (row 22) consists principally of its "statutory" and its "reserve capital," the first of which resembles paid-in capital and is set periodically by government decree, and the second of which is a sort of earned surplus and is built up from the Bank's profits until it equals the first. There are also other "funds" and undistributed profits. Total capital is directly reported only to 1938. The size of the Bank's statutory capital, however, has been made public as the Bank's statutes were revised, and this is small enough to suggest that its total capital has remained small throughout the period since 1938.

The Bank's *total assets and liabilities* are known or can be inferred quite confidently to 1940. Among subsequent years, the two for which any substantial evidence is available are 1956 and 1961, and for these the figures are not highly reliable (see notes for rows 7 and 14, Table 17.1). Otherwise, we are almost wholly ignorant of the behavior of the total during the war and since. This total is probably not an especially useful statistic in itself, but, lacking it, we have little basis for checking the mutual consistency of such component data as we have.

In fairness, however, it should be pointed out that the Bank's monetary liabilities plus its transit accounts (rows 8–18 in Table 17.1), which were nearly equal to its short-term loans in 1940, were still nearly equal to those loans in 1951 and 1956. While it is not possible to say that this near-equality is the only plausible relation between the two groups of accounts, it is certainly one plausible relation. To stretch the same point further and perhaps too far, the difference in 1961 and 1967 between the Bank's short-term loans and the known components of the same group of liabilities is not of a clearly implausible magnitude to represent the missing currency, or, in 1967, currency *plus* budget deposits. At best, however, these are plausibilities of a very fragile and tentative sort.

Other Banks

Banks for Long-Term Investment

On the eve of the period considered here, the banking system included a number of institutions, having evolved in the 1920's, that were specialized in the financing of particular sectors or operations: the Industrial

42. Cf. A. Pinus, in *Kredit i khozraschet*, 1935, no. 11, pp. 6–7.

Bank, the Bank for Electrification, the All-Russian and All-Ukrainian Banks for Cooperatives, the Central Municipal Bank and a number of individual municipal banks, the Central Agricultural Bank and various institutions subordinate to it, the Bank for Foreign Trade and four other banks financing trade along the Asiatic frontiers, and, for the financing of private trade, mutual credit societies. Beginning with a decree of 15 June 1927, these various institutions were progressively liquidated and amalgamated until, by the end of 1931, little was left.

By a decree of 5 May 1932 remnants of the earlier system were reorganized into four banks for the long-term financing of fixed capital investment: the Industrial Bank, the Cooperative Bank, a Central Municipal Bank, and an Agricultural Bank. In 1936 the Cooperative Bank was renamed the Trade Bank; in 1957 it was abolished, its functions being divided between the municipal banks and the Agricultural Bank. In 1959 the functions of the Agricultural Bank were transferred to Gosbank, and the other long-term banks were consolidated into the single Construction Bank.

For the banks existing in 1928–1932, quite full balance sheets are available, although they are not reproduced here. For two years, their loans and deposits are included in Table 17.6—under a somewhat misleading caption, since these were not all, in their primary functions, long-term institutions. Their deposits shown in the table may include time deposits.

For the institutions which came into existence in 1932, full balance sheets are almost wholly unavailable, and in general the authorities have been exceptionally slow to publish statistics on their operations. In fact, the data of Table 17.6 fairly well exhaust what is available, at least for years before 1959 (note that the prewar years in Table 17.6 are different from those in other tables).

This deficiency is not highly consequential for immediate purposes, since these institutions have not performed much of the role of monetary institutions, either in lending or in creating deposits. As may be familiar, their chief function has been to serve as disbursement agencies for the Budget, distributing, typically in interest-free grants, budgetary funds intended for the financing of fixed capital investment. They have, however, performed functions much like those of Gosbank for contract construction organizations and construction projects and, in the case of municipal banks, for municipal enterprises and organizations; these operations account for most of the short-term loans in Table 17.6 and for deposits other than of collective farms. The deposits of the latter are the indivisible fund accounts which were transferred to Gosbank in 1959. For these, as for the current accounts of collective farms, almost continuous statis-

tics are available. Presumably, the excess in Table 17.6 of total loans over total deposits is accounted for chiefly by funds to finance loans, provided by the Budget or accumulated out of the earnings of the sector served by each of the banks.[43]

Table 17.6. Loans and deposits of banks for long-term investment, 1928–1967[a]: 1 January, except 1 October 1928; billion rubles

	Loans		*Deposits*		
	Long-term (1)	*Short-term (2)*	*Collective farms (3)*	*Other enterprises and organizations (4)*	*Total (5)*
1928	.379	.134	na	.056	.056
1932	.541	.041	na	.028	.028
1933	.629	.024	.007	—	—
1938	.685	.020	.051	—	—
1941	.817	.059	.164	.124	.288
1946	—	—	.592	—	—
1951	1.986	.657	.285	.320*	.605*
1956	3.010	1.130	.698	.126	.824
1961	.842	1.569	na	.502	.502
1967	1.769	5.178	na	1.874	1.874

na Not applicable. — Not available. * Estimate.
a. The data cover a changing group of banks. See the text.

Sources
Cols. 1 and 2
1928: Ia. E. Golev, "Razvitie sovetskogo kredita," in *Finansy SSSR za XXX let* (Moscow, 1947), pp. 110–11.
1932: Ia. E. Rubinshtein, *Ocherki organizatsii i razvitiia sovetskogo kredita* (Moscow, 1958), pp. 43–45.
1937, 1938, 1941: Golev, p. 126.
1951–1967: Loans from all banks, *Kreditno-denezhnaia sistema SSSR* (Moscow, 1967), p. 304, and, for 1956, *Narkhoz 58,* p. 907, less loans from Gosbank (Table 17.1).
Col. 3: For all years, Golev, *Sel'skokhoziaistvennyi kredit v SSSR* (Moscow, 1958), pp. 23, 53 and 77.
Col. 4: Col. 5 minus col. 3.
Col. 5:
1928: Economic Survey, 31 Oct. 1928, p. 3.
1932: Rubinshtein, pp. 43–45.
1941: Kreditno-denezhnaia sistema, p. 308: all banks' minus Gosbank deposits.
1951–1967: computed as deposits in all banks. *Kreditno-denezhnaia sistema,* p. 308, and for 1956, *Narkhoz 58,* p. 912, minus deposits in Gosbank (Table 17.1).

43. According to *Finansovo-kreditnyi slovar'* 1:126, published in 1961, budgetary funds account for 50 percent of the Construction Bank's resources.

The Bank for Foreign Trade

This bank emerged from the reorganization of the late 1920's shorn of its branches and converted, effectively although not formally, into an operations department of Gosbank, handling foreign-exchange dealings for individuals. In 1961 the Bank was resurrected, assigned part of the functions of Gosbank in the financing of foreign trade, and as Table 17.7 illustrates, it has since then had published the most detailed balance sheets released in recent years for any banking institution. The deposit figures shown in the table (row 8) probably include deposits payable in foreign currencies, as may figures published at earlier dates for Gosbank deposits.[44]

Table 17.7. Balance sheet of the Bank of Foreign Trade, 1 January 1967 (billion rubles)

Assets		
1	Cash, current and other accounts	.755
2	Loans granted and obligations on guarantees and acceptances	3.658
3	Securities	.007
4	Other assets	.001
5	Total	4.421
Liabilities		
6	Capital	.348
7	Current and other deposit accounts	3.022
8	Loans received, guarantees, acceptances	1.021
9	Undistributed profits	.023
10	Other liabilities	.007
11	Total	4.421

Source: All data are from *Den'gi i kredit*, 1967, no. 7, p. 94.

Savings Banks

Savings banks were a well developed prerevolutionary institution which was revived after the Revolution and which has been extended to a dense and comprehensive network of offices throughout the country. These are the chief suppliers of monetary assets, other than currency, available to the Soviet public. Although some minor organizations and enterprises have held deposits at the savings banks, most are held by individuals. Deposits at these banks have risen over time relative to currency in circulation, from a ratio of 15–20 percent in 1928 to approximate equality in 1956. The volume of deposits has continued to rise rapidly

44. Paul Gekker has circulated a most useful paper on the Bank for Foreign Trade and also on such Soviet-owned banks as the Moscow Narodny in London, which also are engaged in the financing of foreign trade.

since 1956 and is likely now to considerably exceed total currency.[45]

Deposits at the savings banks are not, for the greater part, savings deposits in the usual sense. Time deposits were not introduced until 1939, and by 1967 they accounted for only 25 percent of total personal deposits.[46] The remainder are demand deposits, convertible into currency and, to a limited degree, transferable in payments—chiefly for rent and utilities and not in general for commodities. However, data on the rate of turnover of savings bank deposits, recently on the order of 1 time per year, suggest that they are not in fact much used in rendering payments. All deposits pay interest, or, on a small volume of lottery deposits, the equivalent in winnings. Rates have been reduced periodically, from 8 to 6 percent in 1934, to 3 percent in 1936, to 2 percent in 1955, on demand deposits for individuals. Rates on time deposits of individuals are higher (3 percent from 1955), on deposits of organizations lower.[47]

Until 1963 and some minor exceptions aside, the earning assets of the savings banks consisted solely of government bonds, which were supplied directly to them and without limit by the Budget. As can be seen in Table 17.8 for a few years to 1937, bond holdings were nearly equal to deposit liabilities in those years. Similar bond totals are available for other years through 1939 and annual increments for later years, and all show a close correspondence between bonds and deposits. Scattered evidence on the banks' holdings of till cash and of deposits at Gosbank indicate that they are small. In the absence of complete balance sheets, which are unavailable beyond an early date, this near equality of component assets and liabilities—which must account for most of their respective totals—suggests a reasonable consistency in the data.

In 1963 the savings banks were transferred administratively from the Ministry of Finance to Gosbank. From that time the savings banks have acquired claims against Gosbank rather than government bonds. Whether these claims take the form of deposits and whether they have replaced bonds already held by the savings banks is unclear. One result of the shift and the associated loss of revenues to the Budget is said to have been, since 1963, a relative decline in budget claims and a rise in the claims of the savings banks in the total liabilities of Gosbank.[48]

Of all conceivable areas of monetary statistics, the Soviet authorities have probably released more nearly comprehensive and detailed data on

45. Beyond the data shown in Table 17.8, savings bank deposits increased to 26.8 billion rubles on 1 January 1968 and 32.4 billion on 1 January 1969. *Den'gi i kredit*, 1968, no. 7, p. 91, and 1969, no. 4, p. 3. I.e., by 40 percent in two years.

46. See *Kreditno-denezhnaia sistema SSSR* (Moscow, 1967), p. 315.

47. See L. Valler, *Sberegatel'noe delo v SSSR*, 3d ed. (Moscow, 1957), pp. 30, 39, 40, and 46.

48. Barkovskii and Kartashova, p. 203.

Table 17.8. Bond holdings and deposits of the savings banks, 1928–67: 1 January, except 1 October 1928; billion rubles

		Deposits		
	Government bonds (1)	*Of individuals (2)*	*Of enterprises and organizations (3)*	*Total (4)*
1928	.029	.021	.012	.033
1933	.129	.097	.044	.141
1937	.356	.354	.018	.372
1940	–	.706	.021	.727
1946	–	.900	–	–
1951	–	1.853	–	–
1956	–	5.366	–	–
1961	–	10.909	–	–
1967	–	22.915	–	–

– Not available.

Sources

Col. 1: V. P. D'iachenko, ed., *Finansy i kredit SSSR* (Moscow-Leningrad, 1938), pp. 264–65.

Cols. 2, 3, and 4:

1928, 1933: TsUNKhU, *Socialist Construction in the U.S.S.R.* (Moscow, 1936), pp. 502–7.

1937: D'iachenko, p. 270.

1940: V. P. D'iachenko, ed., *Finansy i kredit SSSR* (Moscow-Leningrad, 1940), p. 348.

Col. 2:

1946: A. G. Zverev, *Gosudarstvennye zaimy i vklady v sberegatel'nye kassy* (Leningrad, 1957), p. 39.

1951, 1956: Narkhoz 56, p. 282.

1961, 1967: Kreditno-denezhnaia sistema SSSR (Moscow, 1967), p. 316.

savings bank deposits than on any other—i.e., on deposits of individuals; deposits of organizations ceased to be reported after 1941, by which date they were insignificantly small. Total ruble figures for deposits of individuals are available in all years. For most years, numbers of depositors are given; both deposits and depositors are divided between urban and rural banks; average sizes of deposits, hence, are also given. For some years, chiefly prewar, breakdowns are given by economic class: workers, employees, collective farmers, and others. For a few years in the 1930's, data were released on the size distribution of deposits (e.g., in 1938, the top 10 percent of depositors held 67 percent of deposits).[49] For many years, the *planned* annual increase in deposits has been published and can be compared, to reveal something about the capability of the planners to forecast monetary variables, with realized increments.

49. Batyrev and Sitnin, p. 75.

Indeed, the wealth of data provided on savings bank deposits, various oddities in their behavior, especially in the postwar period, and the likely relation between them and unintended changes in retail trade inventories, make it tempting to suggest that they are a promising subject for systematic analysis. The prospect is made considerably less attractive, however, by the scarcity of data for currency, which presumably is a rather close substitute for savings bank deposits.

The Demand for Money

The data discussed thus far originated in the books of money suppliers, the banks. Not often have data been released which appear to originate in the books of moneyholders, but one exception is worth remarking on. The TsSU working-capital breakdowns, published in the statistical yearbooks, presumably are based on the accounts of enterprises (other than collective farms, which are excluded). The breakdowns include a category for "monetary resources," which one would suppose consist chiefly of deposits at Gosbank and the long-term banks, together with a little currency and, perhaps, some minor claims against other enterprises. In four of the years considered here, this category amounts to 3.04 billion rubles in 1951, 3.75 billion in 1956, 5.70 billion in 1961, and 10.1 billion in 1967.[50] The data we have (Tables 17.1 and 17.6) for enterprise deposits at Gosbank and the long-term banks imply totals on the same dates of 2.73, 3.15, 5.18, and 10.1 billion respectively. The correspondence appears close between the two sets of books.

As it turns out, moreover, the data provided by the banks permit a distribution of sorts of the total money stock—or total of monetary assets—among holders, which is illustrated in Table 17.9. The distribution is only approximate, because some of the categories assigned to a single holder are actually held by several. Savings bank deposits assigned to other organizations (row 10) are held in part by enterprises and collective farms. Deposits at long-term banks (row 6) were, at least in 1928, held in small part by the State Budget and, after 1932, by local budgets in the municipal banks. The serious difficulty, however, is that while currency came by the mid-1930's to be held largely by households, a significant proportion may have been held by enterprises and organizations in 1928 and still, perhaps, in violation of regulations, in 1933.[51] There is a problem in any case with 1928 in the fact that, before collectiv-

50. *Narkhoz 60*, pp. 92–93, and *67*, pp. 861–62.

51. Data from M. Saigushkin, in *Finansovye problemy*, 1931, nos. 1–2, pp. 76–77, indicate, but not very conclusively, that enterprises and organizations may have held something like one third of the currency stock in 1929, one quarter in 1930. Later sources, e.g., Shenger, p. 145, indicate that this ratio may have fallen subsequently to roughly 10 percent.

Table 17.9. Distribution of monetary assets by holder, 1928–1967: 1 January, except 1 October 1928; billion rubles

	1928	*1933*	*1937*	*1940*	*1946*	*1951*	*1956*	*1961*	*1967*	
Individuals										
1 Currency	.197	.841	1.125	2.40*	8.50*	3.70*	5.60*	–	–	1
2 Deposits at Gosbank	.002	na	na	na	.20*	.10*	.11*	–	.13	2
3 Deposits at savings banks	.021	.097	.354	.71	.90	1.85	5.37	10.91	22.91	3
4 Total	.220	.938	1.479	3.11*	9.60*	5.65*	11.08*	–	–	4
Enterprises and Organizations										
Enterprises, except collective farms:										
5 Deposits at Gosbank	.034	.535	.717	1.17	1.46	2.41	3.02	4.68	8.24	5
6 Deposits at long-term banks	.056	.030*	.080*	.10*	.15*	.32*	.13	.50	1.87	6
Collective farms:										
7 Current accounts	na	.030	.175	.26	.14	.39	.99	.60	4.17	7
8 Indivisible-fund accounts	na	.007	.041	.11	.59	.29	.70	.28	1.05	8
Other organizations:										
9 Deposits at Gosbank	.015	.181	.302*	.30	.30*	.38*	.70	1.02	1.66	9
10 Deposits at savings banks	.012	.044	.018	.02	0*	0	0*	0*	0*	10
11 Total	.117	.827*	1.333*	1.96*	2.64	3.79	5.54	7.08	16.99	11
Individuals, Enterprises, and Organizations										
12 Total	.337	1.765*	2.812*	5.07*	12.24*	9.44*	16.62*	–	–	12
State Budget										
13 Deposits at Gosbank	.071	.146	1.132	.23	.40*	7.50*	8.00	18.00*	–	13
All Sectors										
14 Total	.408	1.911*	3.944*	5.30*	12.64*	16.94*	24.62*	–	–	14

na Not applicable – Not available *Estimate

Sources

All data are taken from Tables 17.1, 17.6, and 17.8, with these exceptions.

Row 1: Part of the currency data is from the text, pp. 414–15 above.

Row 7, 1961, 1967: Kreditno-denezhnaia sistema SSSR (Moscow, 1967), p. 314.

Row 8:

1937: Golev, *Sel'skokhoziaistvennyi kredit v SSSR* (Moscow, 1958), p. 23.

1940: Shenger, *Planirovanie finansov* (Moscow, 1940), p. 113.

1961, 1967: Kreditno-denezhnaia sistema, p. 314.

Row 13, 1946: Estimated from reported surpluses in 1944 and 1945 of 0.8 billion rubles and references to the accumulation of at least part of this at Gosbank.

Row 2, 1946, and 1951; Row 6, 1933, 1937, 1940, and 1946; Row 9, 1946; Row 10, 1946–1967: Freehand interpolations and extrapolations, meant solely to round out the totals.

Rows 4, 11, 12, 14: Sum of components.

No effort is made to incorporate deposits held at the Bank for Foreign Trade (see Table 17.7).

ization, "individuals" were simultaneously householders and producers of the greater part of agricultural output.

If, for the money holdings of individuals and enterprises and organizations, we disregard the defects of the data in Table 17.9, it is clear that data are available—on income, interest rates, etc.—of the kind which would be needed to analyze those holdings in a conventional way. An official series for personal money income runs at least up to the late 1940's; the Bergson-RAND national income estimates cover income in a variety of concepts, real and undeflated, and provide corresponding price indexes.[52] Soviet sources publish transactions or "turnover" totals for various kinds of accounts, measured at various points in the transactions flows. They do, in addition, although more for the prewar years than recently, publish a number of velocity measures—the homogeneity of which over time, however, is open to considerable doubt (cf. also Table 17.4). As has already been indicated, statistics of interest rates on both debts and assets are almost totally available, although it is hard to imagine that these have much bearing on Soviet balance-sheet choices.

The difficulty, of course, with any conventional analysis of the demand for balances of Soviet households or enterprises is that their asset holdings have been subject to a variety of extraordinary constraints. Enterprises have been prohibited (largely) from holding currency and households have been prohibited (largely) from holding nonmonetary assets. The markets in which both operate are rarely cleared by going prices. Formal rationing for consumer goods was in force from 1928 to 1936 and again from 1941 to 1947. Rationing of industrial raw materials and of investment goods has been a basic institution of the system. The 1947 conversion, which treated savings bank deposits much more generously than currency, doubtless shifted radically the relative attractiveness of those two kinds of assets. Whether the psychological propensities of Soviet consumers and managers can be perceived through these obstructions remains to be determined.

The money balances of the State Budget are to be explained, presumably, not by psychology but as a matter of public policy. Among the dates covered in Table 17.9, the Budget's holdings range from as little as 8 percent of the total money stock in 1933 to as much as 44 percent in 1951. Yet, until about 1956, the rationale of these holdings was not seriously discussed in any Soviet source. The post-1956 discussion has

52. Taking as a base estimates in current prices from A. Bergson, *The Real National Income of Soviet Russia Since 1928* (Cambridge, Mass., 1961), pp. 46, 300, and from N. Nimitz, *Soviet National Income and Product, 1956–1958*, RAND Memorandum RM-3112-PR (Santa Monica, June 1962), p. 11, Table 17.9 (row 12) totals for nonbudgetary money holdings amount to 10 percent of GNP in 1928, 10 in 1937, 12 in 1940, 10 in 1951, and 13 in 1956.

been, in many respects, intelligent, but it has been addressed to the existence of those deposits rather than to the policy decisions, or planning calculations, determining their year-to-year change. If we had sufficient data on these accounts, we might infer the operative principles for ourselves, but, regrettably, we do not.

18

Paul Gekker

Statistics on Prices and Money: Summary and Assessment

Chapters 16 and 17 on Soviet price and monetary statistics will surely stand as definitive accounts of the state of our knowledge in these important areas of study of the Soviet economy, until such time at least as the Soviet authorities see fit to modify their long-standing policy of extreme secrecy about the relevant data. Bornstein and Powell have dealt with two areas of the Soviet economy which are, as we know, still among those least satisfactorily illuminated from the quantitative point of view. I am anxious to pay tribute to a feature that is common to their work by noting that I attach great value to the careful and detailed review they give us of the history of statistics gathering and publication in the fields of prices and money. The present volume offers our first comprehensive examination of Soviet statistics in a good many years, and in covering two fields of interest over which the statistical curtain is still very tightly drawn, the review of the historical background that Bornstein and Powell provide for us is in my opinion an essential part of the whole exercise.

It should not be out of place to preface my comments on these two chapters with a plea for understanding. I hope that my acknowledgment of Bornstein's and Powell's work will not be thought perfunctory; or that, in choosing to devote most of my comments to topics different from those to which they have restricted themselves, some basically adverse criticism of their contributions is implied. Our two colleagues have had to concern themselves with exploring and explaining the great gaps in the statistical coverage of Soviet prices and money, and observation of these terms of reference has prevented them from dealing with a number of topics to which I think it may be useful to draw the reader's attention.

A careful reading of Bornstein's and Powell's chapters inspires some general observations about our study of the Soviet economy. The chapters in this book seem to me to have been arranged so as to display an ascending order of ignorance about the Soviet economy—judged in terms of data availability—ranging from physical output data to the familiar aggregates. Those who will later examine this evidence may well have

the impression that we know far less than is in fact the case; but those of us who work on a fairly regular basis with the source material need only think back to the situation that existed with respect to Soviet statistics ten or fifteen years ago to appreciate the very great improvement in our quantitative grasp of things that has come about in this period. Yet I think it undeniable that the field of monetary statistics is the one characterized by the largest gaps in the availability of the sorts of numbers that are commonplace the world over. Monetary statistics have generally speaking been untouched by what Harry Schwartz once called the statistical renaissance of the post-Stalin years, though the financial field is not the only one in which scarcity of data creates problems, as Bornstein's careful survey of price information shows most convincingly. The problem posed by absolute deficiencies in the statistical material, however, is obviously of a different order from the type of difficulty posed by the need to interpret existing data that are imperfect in one way or another—incomplete, ambiguous with respect to definition and coverage, and requiring adjustment before they can be used for meaningful comparative research. To put the matter in another way: the paucity of data in the fields of price and monetary statistics invites speculation on the why rather than on the what or the how of any numbers that now exist, and which we use for measuring and judging the performance of the Soviet economy.

This brings us face to face again, I think, with the old issue of secrecy. Bornstein and Powell both deal with the question but other authors—notably Gertrude Schroeder in Chapter 13—have contributed to the discussion on this point, and it seems to me that a generalization is in order for the benefit of those for whom reading or thinking about Soviet statistics may be a new experience. With some exceptions, and they appear to be of limited usefulness, coverage of Soviet monetary matters in available publications is not significantly improved over what it was during the period of total statistical blackout that began in the late 1930's and lasted for more than twenty years. It is no great revelation to declare that propaganda needs dictate publication policy; for statistics that is certainly the case, even if we allow for the likelihood that some statistics we might consider interesting and important are not systematically collected in the Soviet Union. Nonetheless, the Soviet policy of nonpublication, of selective presentation of data, of concealment by studied and deliberate ambiguity with respect to the most ordinary description of statistical series and other data is most evident in those areas that touch, however indirectly, on the well-being of the Soviet citizenry. It is not solely a question of the absence or of some partial inadequacy of monetary and financial statistics; the deficiencies are glaring in many related

areas of information, such as the level and development of money wages, and the structure of income distribution. The great deficiency of monetary and financial information, as well as of related data in value terms, means that the student of Soviet economic affairs is seriously handicapped in any attempt to examine such important questions as the development over time in the Soviet standard of living, difficult and frustrating as that sort of research must be even with respect to countries for which statistical material is plentiful. But when every allowance has been made for the very different place that money occupies in the Soviet (or a Soviet-type) economy, and for the very different institutional structure and operational role of financial organizations in the centrally planned system, it remains true that serious data imperfections prevent evaluation of the performance of the Soviet system in the same way that statistical measurement constitutes one test of the overall efficiency of any national economy.

I turn now to a necessarily brief review of some salient features of the chapters by Bornstein and Powell, again primarily with the predictable needs and interests of readers of this volume in mind. The fact that I devote most of my comments to Powell's paper will, I hope, be interpreted merely as a reflection of my own preoccupation and closer working experience with the financial side of the Soviet economy.

Some themes in Bornstein's Chapter 16 merit particular emphasis. I have already referred to his discussion of secrecy, and I invite attention to a number of places in the chapter where Bornstein reverts to the connection between the political sensitivity of certain statistical information and the publication of data. In addition, Bornstein is able to cite many examples of price series that are constructed but not published. We know this, as Bornstein demonstrates, from instruction manuals and similar textual materials of a descriptive sort. We do not have this sort of knowledge with regard to some banking statistics, a state of affairs that may be related to Campbell's distinction between state and departmental statistics.

In his comprehensive review of the different price series that are constructed in the Soviet Union, Bornstein has many instructive things to say about the uses to which the data are put. They lead up to his view of the relatively low order of priority of price statistics in Soviet statistical programs, which is related of course to the very low operational significance of price statistics—under present arrangements, at any rate. The deficiencies of Soviet price series as indicators of performance are naturally pointed out by Bornstein. In this connection I am moved to emphasize Bornstein's comment that the index of state retail prices is not useful as a measure of Soviet inflationary pressures; and I welcome Bornstein's view that changes in inventories and in savings deposits are

better guides to the existence of inflationary conditions in the Soviet Union. This is a point to which I should like to revert a bit further on in these summary comments.

A quick check into the major sources we assign to our students shows that most writers have paid little attention to the monetary side of the Soviet economy, though some major contributions could be cited. Happily, the literature has been enriched by the addition in recent years of a number of important articles. I have in mind the writings of Gregory Grossman and George Garvy, both of whom have, it seems to me, revived interest in the subject of Soviet money and finance and made us think in new ways about the role of finance in the Soviet system.[1] There are no doubt a number of reasons why more research on financial developments has not been undertaken. Perhaps the principal reason was that our own research priorities were so different. Even so, it may be that we did not sense the areas of potential research because, by contrast with our evident interest in physical production data or in the construction of national accounts, we could not know clearly what would be worth looking into. Of course, the data problems loomed very large, as they do to this day. The situation is somewhat different with respect to fiscal matters, about which a few remarks may be in order.

Powell's Chapter 17 deals with monetary data proper rather than with some wider subject which we might call financial statistics. The only important omission in the Soviet case is some description of fiscal statistics. Nevertheless, Powell does include some useful discussion of such perennially thorny questions as the size of Ministry of Finance accounts in the State Bank, and of the meaning of the Soviet budget surplus.

1. This is not the place for an exhaustive bibliographical note, but some citations may be useful. Interested readers should familiarize themselves with two articles by Gregory Grossman, "The Structure and Organization of the Soviet Economy," *Slavic Review* 21, no. 2 (June 1962), for an interesting discussion of demonetization in the post-Stalin period; and his "Gold and the Sword: Money in the Soviet Command Economy," in *Industrialization in Two Systems*, ed. Henry Rosovsky (New York: Wiley, 1966) is a most stimulating contribution. Despite the title of George Garvy's excellent survey *Money, Banking, and Credit in Eastern Europe* (New York: Federal Reserve Bank of New York, 1966), a major portion of the study is devoted to analysis of the Soviet (or Soviet-type) monetary and banking system of the standard variety. An earlier article of Garvy's—"The Role of the State Bank in Soviet Planning," in *Soviet Planning: Essays in Honor of Naum Jasny*, ed. Jane Degras and Alec Nove (Oxford: Basil Blackwell, 1964)—is well worth consulting. His more recent "Banking and Credit in the Framework of New Economic Policies in Eastern Europe," in *Banca Nazionale del Lavoro Quarterly Review*, Sept. 1966, will be of interest to many. However brief, a citation of this sort would be seriously deficient if one were to omit Peter J. D. Wiles from this list, and especially his *The Political Economy of Communism* (Oxford: Basil Blackwell, 1962). Wiles's interests exclude nothing related to the Soviet economy (or the Soviet system in general), so that he does not write only or even primarily about matters of interest to us here. But the book is full of stimulating observations on the subject of money and finance—often brilliant, sometimes controversial, frequently exasperating, but never dull.

On the fiscal system alone, we are familiar with the work that has been done, and especially with Holzman's pioneering research in the field of Soviet taxation. The fact is that the Soviet State Budget has over the years been the principal source of information of interest to students of Soviet financial developments. The availability of this information may be explained on the grounds that the practice of reporting some discussion at Supreme Soviet sessions devoted to the annual budget and economic plan is now fairly well established. In view of the role of the Budget in the Soviet system—as a mechanism for the allocation of resources, for the redistribution of income, for the financing of the extensive activities of the Soviet state in so many areas which lie outside the public sector in other societies—the availability of Soviet budget data is of considerable importance and interest.

As we know, information on the Soviet Budget is very far from comparable to similar data for almost all Western countries either in quantity or quality. Moreover, Soviet budget data suffer from major deficiencies peculiar to the Soviet system. One mystery of long standing is the matter of the celebrated budget residual—the difference between aggregate budget expenditures as given in the annual Budget Law, and the total of separately specified expenditure categories. We have observed that this residual has sometimes varied from year to year, for reasons which we cannot explain and can hardly even guess at. In addition, the data we do possess leave a great deal to be desired. While we cannot use space here for a survey of the coverage and usefulness of Soviet budget statistics and related information, we may note that data on budget revenues are more or less straightforward and do not appear to require major adjustments; but statistics on expenditures are notoriously tricky to use. This is particularly the case, as many students know, in trying to reconcile data on Soviet capital investment from the budget reports and from other sources.

Two concluding comments on fiscal statistics. I have the impression that there are no new statistical finds; but in the light of changes in recent years in price and subsidy arrangements, examination of the pattern of budget revenues might be of some interest. Secondly, it seems to me of interest to note the existence of a considerable body of data on the distribution of the consolidated (all-Union) Soviet Budget by subsidiary jurisdictions, and to call attention to the opportunities this information might provide for studies of such questions as the regional pattern of per capita expenditures for various types of social outlays. This is, surely, a minor example, or suggestion; but we are all aware that regional studies of the Soviet system have been neglected. Yet it is not inconceivable that the sort of budget data that are available would, in combination with

demographic statistics, yield interesting material on Soviet nationalities policies; and they might be of use in studies of regional economic development. In this connection, it is interesting to recall that the objective of more nearly equalizing regional per capita social outlays was one of the minor topics mentioned by Khrushchev at the 21st Party Congress. It might be instructive to try to determine whether anything has changed.

Powell's chapter is a singularly rich contribution to the body of writing on the monetary side of the Soviet economy. Along lines that parallel Bornstein's treatment, Powell has some interesting points to make about secrecy and the need to know. From my own experience, I can fully confirm Powell's point about the frequency of computational errors, mistranscriptions of data, and other frailties that remind us of the fallible human personalities behind a great deal of what most of us regard as rather deadly stuff. One could add to Powell's catalogue the occasional experience of having to wrestle with directly contradictory descriptive accounts, by equally authoritative authors, of some feature of the Soviet system. How to reconcile this numerological and editorial untidiness with the widely accepted notion of the existence of an omnipotent system of editorial supervision and censorship must obviously remain an open matter.

The core of Powell's chapter is an ambitious attempt to reconstruct the balance sheets of the USSR State Bank, which have not been published since well before World War II. Powell's tables and his detailed item-by-item explanations will illustrate more vividly than anything else the truly amazing situation with respect to the lack, in the Soviet Union, of the most ordinary sorts of monetary statistics. Powell appears to be the only scholar who has tried to build up the Gosbank's balance sheets, though one ought to cite the interesting, less detailed effort by Edward Ames.[2]

Powell's wide-ranging discussion of data availability raises two questions in my mind. Of course, there are state secrets; and so the condition of the Soviet gold reserve remains as probably the most celebrated minor mystery in the entire world of international finance. Political sensitivity may explain policy with respect to publication of some domestic monetary statistics. Possibly that is the case with money supply figures;

2. In his *Soviet Economic Processes* (Homewood, Ill., 1965). The book has, in my opinion, been unfairly neglected. One may indeed question the usefulness of Ames's highly theoretical approach; many researchers working in Soviet economic studies in more traditional ways have no doubt felt his treatment to be uncongenial or unrewarding, probably when he deals with the microeconomic side of the Soviet system. But the book is full of valuable insights. His treatment of monetary and fiscal policy and of macroeconomic questions generally deserves more attention than it has received. This commentator feels strongly that Ames's analysis of monetary questions merits inclusion of his book in the list of references cited in note 1 above.

but in any case, it is apparent that the whole question of the money supply is not something to which standards of competitive coexistence apply, so that there is no present danger of any Russian monetarists challenging our own valiant teams. But surely some other categories of monetary statistics are quite innocuous, if not entirely useless for research purposes. What would we do, for example, if we had more data on the distribution of bank loans by sector of the economy? Nothing more, one is inclined to say, beyond verbalization of this monetary reflection of planned priorities, supplemented perhaps by some other information concerning the "dependence" of different sectors on bank credit. We already know some of this, and the knowledge amounts to very little. The most serious deficiencies are, as Powell notes, the absence of data on money supply—perhaps we ought to say currency, to be perfectly blunt about it—and the lack of information about the Ministry of Finance accounts with the central bank. With regard to many other data—and I have bank credit statistics in mind—I share Powell's view that the data are not published simply because they are regarded as technical and of no interest.

My second point looks to the future. If I understand the workings of the present-day Soviet economic system, I find it difficult to visualize the need for different monetary statistics than the ones that are now collected; and Powell makes clear that a great deal of data is naturally generated by the banking system. I am less certain in my mind of any immediate need for better price statistics, but the contrary view has been argued by some. Though my own limited experience in the field of price statistics makes me hesitant about pressing my conviction too strongly, I will rest my opinion on the strength of Bornstein's demonstration that the operational significance of existing price indices—their use in planning—is quite unclear.

That, at any rate, is how the prospect looks to me at this moment of writing and reflection. The outlook for the longer term is, we must confess, not only murky but highly controversial. In his interesting Chapter 2 Campbell raises the question whether the need for better data would not emerge with some movement toward a system which relies on and is responsive to market elements. For short, let us say market socialism without being specific about the operational machinery of this future system.[3] At this writing, we can speak with some confidence—though

3. There is a vast and growing literature; but interested readers might look at P.J.D. Wiles, *The Political Economy of Communism,* which begins by introducing an astonishing variety of possible forms of socialism. The discussion is instructive and often entertaining; but Wiles's tendency to manufacture abbreviations and acronyms for his societal and economic systems does little to ease the reader's job of understanding. Nevertheless, it is useful to try to work out Wiles's analytical treatment.

still rather vaguely with respect to specifics—of an economic reform movement in the centrally planned economies. One thing seems clear enough from the most cursory examination of this tendency: so far the Soviet Union lags behind several of the East European countries in the degree to which this reform trend has brought about meaningful change. There are economic reasons for this divergent experience, which we cannot go into here. My personal inclination in explaining the distinction is to place great weight on the significantly higher degree of openness in the East European countries, as compared with the USSR.

In any case, the Soviet authorities have shown themselves to be the least innovative in moving to dismantle the machinery of central planning and in modifying the operational arrangements based on physical output targeting. If, as Campbell suggests, the future system is one in which prices emerge from the market process and the central authorities operate macroeconomic controls, including fiscal and monetary instruments, then the statistical needs of the system become quite a different matter. Price indices, by definition, acquire operational significance, while monetary data have a fundamentally changed importance. So long, for example, as bank credit is a more or less automatic ingredient—a counterpart in financial terms of the physical output plan—it is perfectly reasonable to regard bank credit data as relatively unimportant. If the monetary authorities are assigned any sort of discretionary functions—and, more important, if they come to exercise a strategically more active role in the setting of economic priorities at the national level—then the statistics underlying monetary performance gain very greatly in operational significance. A tendency in the direction of a new and enhanced role for the monetary authorities, along with other changes that may mark a transitional development away from the centrally planned system of the standard type, appears to be underway in some countries in East Europe. As yet, the Soviet authorities have not evidenced any need to move in this direction.

In concluding this review, let me raise the question whether we are exploiting some existing opportunities for interesting research on the financial side of the Soviet economy. Holland Hunter, in Chapter 1 above, does not include the financial field among the sectors (agriculture, the consumer sector, and services) which contributors to this volume have identified as requiring greater statistical attention for a variety of practical and policy reasons. I agree that money and banking data constitute one of Hunter's "vast areas of silence"; and it seems to me unlikely that the very great data deficiencies will be remedied very soon. While I see little prospect for the publication of balance-sheet data and other monetary statistics that are not now to be found in available Soviet

sources, I am still unconvinced that we are doing as much as we might with the material we have at hand. We ought to push our research further along into the monetary side of the Soviet system, and I offer in what follows some suggestions for directions which this research might take. I am hopeful that others will be encouraged to expand and refine these very tentative ideas.

Along these lines, I detect some new interest in the study of the general question of financial equilibrium in the Soviet system, as reflected in money flows. Of course, we do not have the numbers, so that our theoretical speculation will necessarily depend on evidence that will at best be indirect and impressionistic. But the task of laying out some main lines of inquiry ought not to be as difficult as it appears. We know a great deal about the nature of financial flows in the Soviet system. We are all sufficiently familiar with the useful distinction between the two types of money—enterprise (bank account) and household and individual (currency and coin)—now in use; and we also know a great deal about the influences affecting flows between these broadly distinct and segregated channels that Wiles somewhere calls passive and active money. I would begin by reviving interest in Joseph Berliner's article, whose seminal importance for an understanding of Soviet monetary processes has not, in my view, diminished in the twenty years since it first appeared.[4] There are some more recent excursions into the subject, among which I need only cite George Garvy's work and Edward Ames's interesting diagrammatic constructions of payments flows.[5] One can note, too, a fair amount of Soviet writing on the subject of payments flows in the specialized periodicals like *Den'gi i kredit* and *Finansy SSSR,* which I have not studied with the attention that it merits. But one occasionally comes across interesting discussion in these Soviet publications of the need for improved cash-balance planning. The problem is often put in the context of regional considerations and seems to be connected with the difficult problems of planning cash needs under conditions in which payment flows are significantly affected by strong seasonal factors, to say nothing of such influences as population shifts and differential patterns of economic development.

On closer examination, this notion of pushing research into the field of payments flows and the study of financial equilibrium may fail to interest researchers, perhaps simply because the lack of statistics will pose an insuperable obstacle. Some individuals may not be challenged by the prospect of this line of research because it would appear to in-

4. "Monetary Planning in the USSR," *American Slavic and East European Review* 9 (December 1950): 237–54.

5. Ames, pp. 178–79.

volve the sort of uninteresting operational technicality which, as Donald Hodgman once pointed out, forms part of the workaday world of the banking official in the centrally planned economy.[6] Still others may sense interest in the subject but see little promise in pursuing research into payments flows and related topics because the degree to which money may seem to function as a "bearer of options" is still too little developed in the Soviet system.[7] These objections may prove serious obstacles to further research along the lines indicated, but we do not know; and some further thinking on the possible value of this research idea might well be useful.

Another area of possible research on the monetary side, which must stand as my final contribution to a very modest program of future work, seems to me more promising and of greater interest to students of the Soviet economy generally. This is the area of personal savings in the Soviet Union. Earlier I noted Bornstein's view that changes in savings deposits could provide valuable guidance to judgment on the existence and strength of inflationary pressures in the Soviet economy. For Powell, as well, the study of savings deposits is "a promising subject for systematic analysis."

As monetary statistics go, the savings figures are fairly good, though one wishes one had something more frequent than annual data. But the series extend back to the 1947 currency reform; there is a fair amount of regional data, and even interesting detail on savings in small and remote areas. At least this regular reader of the Gosbank's monthly journal has noticed an increase in the amount of reporting and discussion of the development of individual savings since 1963, when the savings bank network was transferred to the State Bank system. Much of this material has not been used.[8]

The comments on savings deposits in Bornstein's and Powell's chapters suggest that one research approach will utilize these savings statistics, along with such other relevant current indicators as retail sales figures and inventory data, in an effort to judge the success of the Soviet economic system in maintaining balance in consumer goods markets and

6. Donald R. Hodgman, "Soviet Monetary Controls Through the Banking System" in *Value and Plan*, ed. Gregory Grossman (Berkeley: Univ. of California Press, 1960), p. 105.

7. See Gregory Grossman, ed. *Money and Plan: Financial Aspects of East European Economic Reform* (Berkeley: Univ. of California Press, 1968), especially his introductory chapter. The phrase "a bearer of options," it should be noted, is Professor Wayne A. Leeman's creation.

8. In the second edition of his *The Contrasting Economies* (Boston: Allyn & Bacon, 1969) Lynn Turgeon has added a chapter "The Contrasting Monetary Veils," in which he incorporates data from a recent Soviet study of savings deposits. The original article by V. Borisov—"The Growth of Savings in the USSR," *Problems of Economics*, Sept. 1967—is a good example of the better sort of writing on the subject in the Soviet specialized literature.

in avoiding inflationary pressures, open or repressed. There are some obvious reasons why these questions interest students of the Soviet economy. We all recall that the Khrushchev years introduced a number of interesting trends that significantly affected the income position of large groups among the Soviet population. There is no need here for more than a quick reminder of some major elements in this development: the introduction, in successive stages, of higher prices for farm products, later combined with the liberalization of agricultural procurement arrangements and a trend toward remonetization in the countryside as reflected in the substitution of cash for in-kind income payments; selective income increases (via higher minimum wages); a series of welfare measures, like higher pensions, reduced taxes, and the remission of some specific fees and charges; the abolition of compulsory annual bond drives. In short, we were witnesses to a new and varied program which had the effect either of putting more income directly into the hands of many individuals who had been among the most depressed elements in the population, or of freeing some part of current income for other uses. That this development worked to alter very significantly the income position and expenditure pattern of countless Soviet consumers—and in fact brought about a fundamental change in the character of consumer goods markets generally—is by now common knowledge. The role of savings deposits, which showed exceptionally rapid rates of growth in some of these years, has not been adequately studied, to this writer's knowledge. These savings movements should, at the very least, provide corroborative evidence of the impact of Khrushchev's programs when they seemed to be exerting maximum effect.[9]

In thinking about research into this subject it would be taking an unnecessarily narrow point of view to say that the area of study should be restricted to suit only the interests of students of the monetary side of the Soviet system, absorbing as these concerns may be to those working in the field. From what has been said, a study of savings deposits is obviously related to the three key areas which Holland Hunter mentions in Chapter 1 above. But one may cast the net more widely still. Research on savings, as an aspect of performance in the consumer sector of the economy, could constitute a minor but not uninteresting part of the study

9. Franklyn D. Holzman's interesting article, "Soviet Inflationary Pressures, 1928–1957: Causes and Cures," *Quarterly Journal of Economics* 74 (May 1960): 167–373, deals very largely with the earlier years he selected for study. His account stops short of the period—roughly 1956–58—when the entrance into force of several of Khrushchev's welfare measures exerted a particularly powerful influence on disposable money incomes. The only attempt to relate the development of savings deposits to the existence of inflationary conditions of which this writer is aware will be found in the interesting paper by David W. Bronson and Barbara S. Severin, "Recent Trends in Consumption and Disposable Money Incomes in the USSR," in Joint Economic Committee, *New Directions in the Soviet Economy* (Washington, 1966), Part II–B.

of that human and living reality which, Hunter does well to remind us, deserves our serious attention. The behavior of the Soviet citizen—in this case in his role as an individual saver—ought to interest us as one aspect of the quality of life in this very different setting; and I find it surprising that so little interest has been shown in this personal side of daily existence in the Soviet Union. Of course the opportunities for study and observation are bound to be limited, and difficult as well. For one thing, it has been a good many years since the time when foreigners, in appreciable numbers at least, have had the opportunity of long residence among Soviet citizens and in typical Soviet conditions.[10] I find that little has been done along these lines.[11] It is my hope that readers will be encouraged by these remarks to turn their attention to a study of this one side of the daily existence of some typical Soviet individuals. In pushing this idea, finally, I wish to avoid being accused of neglecting the possibilities of using interdisciplinary techniques to study savings habits, even though I cannot claim expertise in fields other than my own.[12]

10. By way of illustration of the sort of imaginative analysis and competent reporting I have in mind, I cite—on an altogether different subject—George Feifer's engaging *Justice in Moscow* (New York: Simon and Schuster, 1964).

11. An additional bibliographical listing may serve to illustrate the very meager material on savings habits among Russians. I must skip mention of some older writers. On the economics of the subject, there is nothing, unfortunately, in Margaret Miller's *Rise of the Russian Consumer* (London: Institute of Economic Affairs, 1965). I can find no reference in Arvid Brodersen's otherwise excellent work, *The Soviet Worker* (New York: Random House, 1966). Some useful material on savings is interwoven in Philip Hanson's recent book, *The Consumer in the Soviet Economy* (New York: Macmillan, 1968), but his main interest is in measuring consumption in real terms. Among works dealing more generally with Soviet conditions, the situation is not much better. There is a brief but excellent discussion of savings habits in Jack Miller's very recent and good book, *Life in Russia Today* (London: Batsford, 1969). The occasional references to savings habits, attitudes toward frugality, and similar notions in works dealing with the Russian "national character"—books like Klaus Mehnert's *Soviet Man and His World* (1961) and Wright W. Miller's *Russians as People* (1961)—may conform to our individual observations (or prejudices) but they can hardly be accorded scientific respectability. Finally, even the last book by that marvelously prolific student of Russian life, the late Maurice Hindus,—his stimulating *The Kremlin's Human Dilemma* (New York: Doubleday, 1967)—has only a fleeting reference to savings habits in what is a large, infinitely varied, and warmhearted study of the Russian scene.

12. Some years ago, in a private discussion with Professor Demitri Shimkin on the subject of Soviet writings on savings deposits and savings behavior, I was deeply impressed with the sort of contributory evidence he was able to cull from such sources as Soviet ethnographic journals, material on folklore, and the like. I have since that time been convinced that the opportunities for interdisciplinary research have been neglected. Besides, there are other source materials than the social sciences and their specialized techniques. Two examples of quite a different approach come to mind: we have Gerschenkron's pioneering essay on the use of literary (dare we call them belletristic?) sources for the study of economic conditions—his "A Neglected Source of Economic Information on Soviet Russia," in *Economic Backwardness in Historical Perspective* (1962)—and there is Alec Nove's interesting essay "The Peasants in Soviet Literature Since Stalin," in his *Economic Rationality and Soviet Politics* (New York: Praeger, 1964).

It is always tempting, finally, to look back over the road we have traveled in order to get some notion of how far along we have come. Writing ten years ago, Gregory Grossman suggested that "coverage on finance has been relatively good, thanks particularly to the work of Holzman and Powell," but he also noted that "much interesting work remained to be done." It is still true to say, as he wrote at that time, that "little is known about the operating principles of basic economic units: the store, the bank. . . ."[13] He would agree today, I feel certain, that it is time we got to work.

13. Gregory Grossman, in *American Research on Russia*, ed. Harold H. Fisher (Bloomington, Ind.: Indiana Univ. Press, 1959), pp. 43, 45.

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